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PATENT ABSTRACTS OF JAPAN

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(71)Applicant : FUJI PHOTO FILM CO LTD

(72)Inventor : ISHIZUKA HIROSHI
SHIBAHARA YOSHIHIKO
FUJIMOTO HIROSHI

(54) ELECTROPHOTOGRAPHIC IMAGE RECEIVING MEMBER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an electrophotographic image receiving member suitable for photographic use which can form an image with excellent gloss appearance.

SOLUTION: In the electrophotographic image receiving member, the mirror face gloss GsP(45°) and dispersion of reflected light GsP (45±3°) of the image forming face satisfy the following conditions. The conditions are 30≤GsP(45°) and 0≤GsP(45±3°)≤15. In the conditions, GsP(45°) is the mirror face gloss at 45° incident angle and 45° reception angle; GsP(45±3°) is the average of GsP(*42°) and GsP(*48°); wherein GsP(*42°) is the mirror face gloss at 45° incident angle and 42° reception angle and GsP(*48°) is the mirror face gloss at 45° incident angle and 48° reception angle.

LEGAL STATUS

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CLAIMS

[Claim(s)]
[Claim 1] The television ingredient for electrophotography with which the specular gloss GsP (45 degrees) of a toner image formation side and reflected light distribution GsP (45 degrees **3 degrees) are characterized by satisfying the following conditional expression.
[Equation 1] Formula 1 30<= GsP (45 degrees)
[Equation 2]
A formula 2 0 <= <=15 (in a top type GsP (45 degrees) 45 incident angles) GsP (45 degrees **3 degrees) specular gloss;GsP (45 degrees **3 degrees) in 45 light-receiving angles -- average [of GsP (*42 degree) and GsP (*48 degree)]; -- GsP (*42 degree) 45 incident angles Specular gloss in 42 light-receiving angles; GsP (*48 degree) is the specular gloss in 45 incident angles and 48 light-receiving angles.
[Claim 2] The television ingredient for electrophotography of claim 1 characterized by satisfying the following conditional expression when the print of a white image, 40% gray image, and the black image is carried out to a toner image formation side by the electro photographic printer.
[Equation 3]
formula 3 -35 <= GsGr(45 degrees)-GsWh (45 degrees) <=10 -- [Equation 4]
Formula 4 <= -30 <= GsBl(45 degrees)-GsWh (45 degrees) 15 (in a top type) Specular gloss;GsWh (45 degrees) of the white image formation section in 45 incident angles and 45 light-receiving angles GsWh (45 degrees) 45 incident angles, Specular gloss of 40% gray image formation section in 45 light-receiving angles; GsBl (45 degrees) is the specular gloss of the black image formation section in 45 incident angles and 45 light-receiving angles.
[Claim 3] The television ingredient for electrophotography of claims 1 or 2 characterized by forming the toner television layer at least in one side of the opaque base material which laminated both sides by resin.
[Claim 4] The television ingredient for electrophotography of claim 3 characterized by the thickness of said toner television layer being 5 micrometers or more.
[Claim 5] The television ingredient for electrophotography of claim 4 characterized by said toner television layer containing polyester resin.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the television ingredient for electrophotography. It is suitable for the photograph application and, more specifically, is related with the television ingredient for electrophotography which can form the image which was excellent in gloss texture.
[0002]
[Description of the Prior Art] With highly-minute-izing of image marking, or the formation of many gradation, the electro photographic printer of a photograph output application which aimed at carrying out color repeatability, resolution, etc. just like a film photo various-kinds-develops, and has come to be marketed. However, although the color repeatability and resolution of an electro photographic printer were improving, the print image obtained by these printers was not what may be satisfied compared with the conventional silver salt photoprint. As for it, compared with a silver salt photoprint, surface gloss is inadequate, and the cause is insufficient of gloss texture.
[0003] Generally, the glossiness of a reflective print ingredient is JIS. Z8741 and JIS It is expressed with the specular gloss specified to P8142. The 45-degree specular gloss by JISZ8741 of a commercial silver salt photoprint is about 90. Then, preparing the toner television layer containing thermoplastics on a base material as an attempt which raises the glossiness of an electrophotography print even on the level of such a silver salt photoprint is proposed (JP,4-212168,A, JP,8-211645,A, Japanese-Patent-Application-No. No. 368980 [11 to] description). If such a toner television layer is prepared, the specular gloss of a television ingredient can be raised notably.
[0004]
[Problem(s) to be Solved by the Invention] However, it became clear using the above means equivalent to a silver salt photoprint or that the print of the gloss texture exceeding the silver salt photoprint average or it could not be obtained even if it manufactures the television ingredient which has the specular gloss beyond it and prints by the electro photographic printer actually. Moreover, there is a gloss difference called a differential gross between the image section and a white ground in the print by the electro photographic printer, and there is unnaturalness of a feeling of gloss, like a photographic subject floats and appears within an image. It was not what may satisfy the conventional television ingredient as a photograph by the unnaturalness of such a feeling of lack of gloss and a feeling of gloss. In view of the trouble of these conventional techniques, this invention made it the technical problem to offer the television ingredient for electrophotography which can form the image excellent in gloss texture.
[0005]
[Means for Solving the Problem] In order to solve the above-mentioned technical problem, as a result of repeating examination wholeheartedly, when this invention person did specular gloss more than constant value and suppressed reflected light distribution below to constant value, it found out that the image which was excellent in the television ingredient for electrophotography at gloss texture could be formed, and this invention was reached.
[0006] That is, the television ingredient for electrophotography characterized by this invention satisfying the specular gloss GsP (45 degrees) of a toner image formation side and the conditional expression of the following [distribution / GsP (45 degrees **3 degrees) / reflected light] is offered.
[Equation 5] Formula 1 30<= GsP (45 degrees)
[Equation 6]
A formula 2 0 <= <=15 (in a top type GsP (45 degrees) 45 incident angles) GsP (45 degrees **3 degrees) specular gloss;GsP (45 degrees **3 degrees) in 45 light-receiving angles -- average [of GsP (*42 degree) and GsP (*48 degree)]; -- GsP (*42 degree) 45 incident angles Specular gloss in 42 light-receiving angles; GsP (*48 degree) is the specular gloss in 45 incident angles and 48 light-receiving angles.
[0007] When the print of a white image, 40% gray image, and the black image is carried out to a toner image formation side by the electro photographic printer, as for the television ingredient for electrophotography of this invention, it is desirable to satisfy the following conditional expression.
[Equation 7]
formula 3 -35 <= GsGr(45 degrees)-GsWh (45 degrees) <=10 -- [Equation 8]
Formula 4 <= -30 <= GsBl(45 degrees)-GsWh (45 degrees) 15 (in a top type) Specular gloss;GsWh (45 degrees) of the white image formation section in 45 incident angles and 45 light-receiving angles GsWh (45 degrees) 45 incident angles, Specular gloss of 40% gray image formation section in 45 light-receiving angles; GsBl (45 degrees) is the specular gloss of the black image formation section in 45 incident angles and 45 light-receiving angles.
[0008] As for the television ingredient for electrophotography of this invention, it is desirable that it is what has the structure where the toner television layer was formed at least in one side of the opaque base material which laminated both sides by resin. As for a toner television layer, it is desirable that thickness contains polyester resin by 5 micrometers or more. It is desirable that data smoothing which applies heat and/or a pressure to the television ingredient for electrophotography of this invention is performed, and, as for the processing temperature, it is desirable that it is 50 degrees C or more.
[0009]
[Embodiment of the Invention] The television ingredient for electrophotography of this invention is characterized by the specular gloss GsP (45 degrees) of a toner image formation side and the reflected light distribution GsP (45 degrees **3 degrees) satisfying the relation

between the above-mentioned formula 1 and a formula 2. Setting at a ceremony 1, GsP (45 degrees) is JIS. The specular gloss in 45 incident angles and 45 light-receiving angles which are measured according to Z8741 is expressed. As prescribed in a formula 1, GsP (45 degrees) of the toner image formation side of the television ingredient for electrophotography of this invention is 30 or more. As for GsP (45 degrees), it is more desirable that it is 60 or more, and it is further more desirable that it is 75 or more.

[0010] In an equation 2, the reflected light distribution GsP (45 degrees **3 degrees) is the average of GsP (*42 degree) and GsP (*48 degree), and is computed according to the following formulas.

[Equation 9] [GsP(*42 degree) + GsP (*48 degree)] / 2GsP (*42 degree) is the specular gloss in 45 incident angles and 42 light-receiving angles, and GsP (*48 degree) is the specular gloss in 45 incident angles and 48 light-receiving angles. These values are JIS. Only the light-receiving angle of Z8741 is changed into 42 degrees thru/or 48 degrees, and is measured. Although GsP(s) (45 degrees **3 degrees) are 0-15 in this invention, it is desirable that it is 0-10, and it is more desirable that it is 0-6.

[0011] The television ingredient for electrophotography which fulfills the conditions of a formula 1 and a formula 2 has the description in the point that specular gloss is fully high and reflected light distribution is suppressed low. If it puts in another way, the description is in the point for an axis of abscissa that the profile when taking glossiness (reflected light concentration) along an axis of ordinate is more sharp, about a light-receiving angle. Conventionally, since attention was chiefly paid to raising the specular gloss of the television ingredient for electrophotography, even if it raised specular gloss, gloss texture has not fully been improved, but the limitation was in the improvement of gloss texture. this invention person used to find out that the gloss texture of a formation image can be improved unexpectedly by suppressing the high reflected light distribution with the conventional television ingredient for electrophotography for the first time under such a technical situation paying attention to reflected light distribution.

[0012] Since gloss texture can form a higher image if the above-mentioned formula 3 and a formula 4 are filled further, the television ingredient for electrophotography of this invention is desirable. If a formula 3 and a formula 4 are filled, the gloss difference (differential gross) between the image section and a white ground can be suppressed, and unnaturalness a photographic subject floats and appears within an image can be avoided. Whether these conditions are satisfied can form a white image, 40% gray image, and a black image in the television ingredient for electrophotography using the printer for electrophotography, and it can check them by measuring each specular gloss of the white image formation section, the gray image formation section, and the black image formation section. In a formula 3 and a formula 4, specular gloss;GsBl (45 degrees) of 40% gray image formation section [in / in specular gloss;GsWh (45 degrees) of the white image formation section / in / in GsWh (45 degrees) / 45 incident angles and 45 light-receiving angles / 45 incident angles and 45 light-receiving angles] shows the specular gloss of the black image formation section in 45 incident angles and 45 light-receiving angles. Measurement is JIS. It carries out in conformity with Z8741.

[0013] As prescribed in a formula 3, it is desirable that GsGr(45 degrees)-GsWh (45 degrees) is -35-1 in this invention, it is more desirable that it is -30-10, and it is desirable that it is especially -20-5. As prescribed in a formula 4, it is desirable that GsBl(45 degrees)-GsWh (45 degrees) is -30-15 in this invention, it is more desirable that it is -30-10, and it is desirable that it is especially -20-5. In order to make the value of the reflected light distribution GsP (45 degrees **3 degrees) or less into 15 in this application, approaches, such as raising the below-mentioned surface smoothness, are useful.

[0014] The configuration of the television ingredient for electrophotography of this invention is explained below at a detail. As a base material which constitutes the television ingredient for electrophotography of this invention, fixation temperature can be borne, and if a demand can be satisfied in respect of the crater after smooth nature, a whiteness degree, slipping nature, friction nature, antistatic nature, and fixation etc., anythings can be used. Generally, base materials for photographs, such as edited by Society of Photographic Science and Technology of Japan "basic-film photo editing of photograph engineering -", paper given in Corona Publishing ** (Showa 54) (223) - (240) a page, and synthetic macromolecule (film), are mentioned. Specifically A synthetic paper (synthetic papers, such as a polyolefine system and a polystyrene system), Paper of fine quality, art paper, coat paper (both sides), a cast-coated paper (both sides), The mixed papermaking made from synthetic-resin pulp and natural pulp, such as polyethylene, Yankee paper, a baryta paper, wallpaper, a lining form, synthetic resin, or an emulsion impregnated paper, A synthetic-rubber-latex impregnated paper, synthetic resin containing paper, the paper board, cellulose fiber paper, Paper (paper which covered both sides especially with polyethylene) base materials, such as polyolefine coat paper, Polyolefine, a polyvinyl chloride, polyethylene terephthalate, polystyrene methacrylate, Polyethylenenaphthalate, a polycarbonate polyvinyl chloride, polystyrene, Polypropylene, polyimide, and celluloses (for example, triacetyl cellulose) The film which carried out processing (for example, processing of making pigments, such as titanium oxide, contain into a film etc.) which gives white reflexibility to the various plastic films or the sheet, and this plastics of ** or a sheet, cloth, a metal, and glass are used. As for these, it is desirable that the field of the side which could also use independently, could also use as a base material which laminated one side or both sides with synthetic macromolecules, such as polyethylene, and prepared the toner television layer at least laminates, and it is more desirable that the double-sided lamination is carried out. The mode laminated with polyethylene with a thickness of 5-30 micrometers is desirable. Moreover, the layered product by the combination of the arbitration of the above-mentioned base material can also be used. In addition, the base material of a publication can be used for a JP,62-253159,A (29) - (31) page, a JP,1-61236,A (14) - (17) page, JP,63-316848,A, JP,2-22651,A, a 3-56955 official report, a U.S. Pat. No. 5,001,033 description, etc.

[0015] 25-300 micrometers, the thickness of these base materials is 50-260 micrometers still more preferably, and is usually about 75-220 micrometers more preferably. Moreover, although various things are able to use it according to the object as stiffness, if photograph image quality tends to receive a picture, the thing near the base material for color film photos is used preferably. What is close to a base material or the smoother thing for color film photos is desirable also about smooth nature. Moreover, as a base material, it is desirable from a viewpoint of the fixation engine performance that the thermal conductivity of the paper under the conditions whose relative humidity is 65% at 20 degrees C is more than 0.50 kcal/m-h and **. Thermal conductivity is JIS. P The transfer paper which carried out gas conditioning based on 8111 can be measured by the approach indicated by JP,53-66279,A. Moreover, as for the consistency of a base material, it is desirable that it is three or more [0.7g //cm] from the above-mentioned viewpoint.

[0016] Various kinds of additives suitably chosen within limits which do not injure the object of this invention can be made to add in the configuration layer of the base material these-mentioned above. For example, pigments, colors, etc., such as a brightening agent, and an electric conduction agent, a loading material, titanium oxide, ultramarine blue, carbon black, can be made to contain if needed. Moreover, surface treatment and under coats various for the object which improves adhesion with the layer prepared on it can be performed to one side or both sides of these base materials. As surface treatment, activation, such as processing of mold attachment of a glossy surface or a detailed side given in JP,55-26507,A, a mat side, or a silky surface, and corona discharge treatment, flame treatment, glow discharge processing or plasma treatment, etc. is mentioned. As an under coat, the approach of a publication can be used for JP,61-846443,A, for

example. Moreover, these can also use together and use performing activation, after using independently and performing mold attachment etc., or performing an under coat after surface treatment, such as activation, further etc. in the combination of arbitration. Into under the configuration of these base materials, a front face, rear faces, and those combination, the antistatic agent of a hydrophilic binder, a semiconductance metallic oxide like alumina sol or the tin oxide, and carbon black and others may be applied. Specifically, the base material of a publication can be used for JP,63-220246,A etc.

[0017] The television ingredient for electrophotography of this invention is constituted from some layers by the object on a base material, a color and a black toner are received at least, and the television layer for forming an image is prepared. A surface protective layer, an interlayer, an under coat, a cushion layer, an electrification accommodation (prevention) layer, a reflecting layer, a tint preparation layer, a shelf-life amelioration layer, an adhesion prevention layer, an anti curl layer, a smoothing layer, etc. can be prepared besides a television layer. Moreover, each layer may consist of two or more layers.

[0018] When it is the television ingredient of the transparency mold with which a television layer etc. is prepared on a transparence base material, it is desirable that each class on a base material is also transparent. Moreover, when it is the television ingredient of the reflective mold with which a television layer etc. is prepared on a reflective base material, there is no need that each class on a base material is transparent, and it is desirable. [of a rather white thing] As a whiteness degree, it is JIS. P It measures by the approach specified to 8123, and 85% or more is desirable. Moreover, it is desirable that a spectral reflectance is [the difference of the maximum spectral reflectance of 85% or more and this wavelength region and the minimum spectral reflectance] less than 5% in a 440-640nm wavelength region. Furthermore, it is more desirable that a spectral reflectance is [the difference of the maximum spectral reflectance of 85% or more and this wavelength region and the minimum spectral reflectance] less than 5% in a 400-700nm wavelength region. Moreover, the television ingredient for electrophotography of this invention can prepare a back layer in a television layer and an opposite hand on both sides of a base material.

[0019] When it is the television ingredient of the transparency mold with which a television layer etc. is prepared on a transparence base material, it is desirable that a back layer is also transparent, but when it is the television ingredient of the reflective mold with which a television layer etc. is prepared on a reflective base material, there may not be need that the back layer is transparent and may be any color. However, in the case of the double-sided output mold television ingredient which forms an image also in a rear face, it is desirable that a back layer is also white. A whiteness degree and 85% or more of a spectral reflectance are desirable like a front face. Moreover, for the television ingredient for electrophotography of this invention, opacity is JIS. P It measures by the approach specified to 8138, 85% or more is desirable, and 90% or more is more desirable.

[0020] An organic and/or inorganic particle (it abbreviates to a mat agent below.) which is used for this invention may be set to a photograph technical field, is known, and can be defined as being the discontinuous particle of organic [which can be distributed in a new aquosity organic colloid binder], and/or an inorganic material.

[0021] As an example of an inorganic mat agent, it is a silver halide particle (the iodine atom may be further added slightly as a halogen component with the silver chloride, the silver bromide, etc.), glass, etc. which do not form oxide (for example, a silicon dioxide, titanium oxide, a magnesium oxide, an aluminum oxide, etc.), alkaline earth metal salts (for example, being a sulfate and a carbonate specifically a barium sulfate, magnesium sulfate, a calcium carbonate, etc.), and an image. An aluminum oxide and a silicon dioxide are desirable especially.

[0022] About an inorganic mat agent, the West German patent No. 2529321 description, the British patent No. 760775 description, The patent No. 1260772 description, a U.S. Pat. No. 1201905 description, The patent No. 2192241 description, the patent No. 3053662 description, the patent No. 3062649 description, The patent No. 3257206 description, the patent No. 3322555 description, the patent No. 3353958 description, The patent No. 3370951 description, the patent No. 3411907 description, the patent No. 3437484 description, The patent No. 3523022 description, the patent No. 3615554 description, the patent No. 3635714 description, the patent No. 3769020 description, the patent No. 4021245 description, and the patent No. 4029504 description have a publication.

[0023] And as an organic mat agent, starch, cellulose ester (for example, cellulose acetate propionate etc.), cellulose ether, synthetic resin (for example, ethyl cellulose etc.), etc. are mentioned. as the example of synthetic resin -- water -- insoluble or a poorly soluble composition polymer -- it is -- for example, alkyl (meta) acrylate -- Alkoxy alkyl (meta) acrylate, glycidyl (meta) acrylate, Acrylamide, vinyl ester (for example, vinyl acetate), acrylonitrile, (Meta) An olefin (for example, ethylene, a propylene), styrene, benzoguanamine resin, A formaldehyde condensation polymer, an epoxy resin, an amide, carbonate, Independent or combination, such as phenol resin, vinylcarbazole, and a polyvinylidene chloride, Or these, an acrylic acid, a methacrylic acid, alpha, beta-partial saturation dicarboxylic acid, The copolymer which combined the polymer which uses combination of hydroxyalkyl (meta) acrylate, sulfoalkyl (meta) acrylate, a styrene sulfonic acid, etc. as a monomer component, and the repeat unit can be used. In the case of the copolymer, the repeat unit of a little hydrophilic property may be included. An acrylic acid, a methacrylic acid, alpha, beta-partial saturation dicarboxylic acid, hydroxyalkyl (meta) acrylate, sulfoalkyl (meta) acrylate, and a styrene sulfonic acid are contained in the example of the monomer which forms the repeat unit of a hydrophilic property. Moreover, when a bridge is constructed in these, since it excels in thermal resistance, it can use very preferably. Bridge formation polymethylmethacrylate, polyethylene and bridge formation polystyrene, benzoguanamine resin, and a formaldehyde condensation polymer are desirable also in having mentioned above.

[0024] About an organic mat agent, the British patent No. 1055713 description, a U.S. Pat. No. 1939213 description, The patent No. 2221873 description, the patent No. 2268662 description, the patent No. 2322037 description, The patent No. 2376005 description, the patent No. 2391181 description, the patent No. 2701245 description, The patent No. 2992101 description, the patent No. 3079257 description, the patent No. 3262782 description, The patent No. 3443946 description, the patent No. 3516832 description, the patent No. 3539344 description, The patent No. 3591379 description, the patent No. 3754924 description, the patent No. 3767448 description, JP,49-106821,A, and a 57-14835 official report have a publication. as a commercial item -- for example, Showa Denko AS- 10, AS-20, AS-30, AS-40, AS-50, and the Sumitomo Seika Chemicals make -- flow bead LE-1080 and LE- 2080, EA-209, CL-2080, Fluothane UF-1.5, UF-4, and the NIPPON SHOKUBAI EPO star S -- S12, M30, MS, L15, GP-50, GP-70, GP-90, and the Sekisui Plastics make -- theque polymer SBX-6, SBX-8, SBX-12, SBX-17, and MBX- 8, MBX-12, MBX-15, MBX-20, MBX-30, and the Soken Chemical & Engineering make -- MR-2G -- MR-7G, MR-10G, MR-20G, SGP-70C, SGP-100C, SAIRISHIA 250, 250N, 256, and 256N made from the Fuji SHIRISHIA chemistry, 310, 320, 350, 370, 430, 440, 450, 470, 435, 445, 436, 446, 456, 476, 530, 550, 730, 740, 770, and Ganz -- formation -- make -- GANTSU pearl GM-0600, GM-1005, GM-2005, and GM-0401 -- GM-0801, GM-2001, GB-0502, GB-0802, GB-1002, GB-2002, Dow Corning Toray Silicone TOREFIRU R-900, R-902A, The Toshiba Silicone toss pearls 105, 120, 130, 145, 3120, and 240 and Matsumoto Yushi-Seiyaku Matsumoto microphone loss fur F-30** are mentioned, and starch, titanium oxide, etc., such as wheat, may be used. inside -

- the Showa Denko make -- AS-10, AS-20, AS-30, the NIPPON SHOKUBAI EPO star L15, and the Sekisui Plastics make -- theque polymer SBX-12, SBX-17, and MBX-20 are desirable.

[0025] Two or more kinds of particles mentioned above may be used together. As for mean particle diameter, it is desirable that it is 1-100 micrometers, and its further 2-30 micrometers are desirable. 0.2 to 30 times of the thickness of a television layer are desirable, and further 0.5 to 20 times are one to 15 times desirable especially preferably. Especially as amount of the particle used, it is desirable that it is 0.01 - 0.5 g/m2, and it is still more desirable that it is 0.02 - 0.3 g/m2. When it thinks with projected area, 0.1 - 50% of this is desirable, desirable, and especially desirable. [1 - 20% of] [further 0.5 - 30% of] As for the refractive index of the organic and/or inorganic particle used for this invention, it is desirable that it is 0.8-3.0, it is more desirable that it is 1.1-2.9, and it is desirable that it is especially 1.3-2.6.

[0026] A toner television layer receives at least the toner which forms an image from a development drum or a medium imprint object by the electrical and electric equipment (**), a pressure, etc. in an imprint process, and contains the matter of the televising nature which can be fixed with heat, a pressure, etc. at a fixation process. As receptiveness matter, thermoplastics, water soluble resin, a pigment with a fine particle size, etc. are used. As for a toner television layer, it is desirable to have 1/2 or more thickness of the particle diameter of a toner, and it is more desirable to have particle diameter 1 to 3 times the thickness of a toner. Moreover, a toner television layer has the desirable thing of the thickness indicated by JP,5-216322,A and the No. 301939 [seven to] official report.

[0027] As physical properties of a toner television layer, it is desirable to satisfy the following one item or more, and it is desirable two or more more desirable items and to satisfy all items most preferably.

(1) Tg(s) (glass-transition temperature) of a television layer should be 30 degrees C or more and less than [(Tgof toner)+20 degree C].

(2) The range of T1/2 of a television layer (1/2 law softening temperature) should be 80-120 degrees C more preferably. [60-150-degree C]

(3) Tfb (runoff initiation temperature) of a television layer should be [40-100 degree C of Tfb(s) of a television layer] less than [of a toner / Tfb+10 degree C] more preferably.

(4) The viscosity of 40 degrees C or more and a toner has the temperature lower than the temperature set to 1x105CP from which the viscosity of a television layer is set to 1x105CP.

(5) The storage modulus (G') in the fixation temperature of a television layer being 1x102Pa - 1x105Pa and a loss modulus (G") should be 1x102Pa - 1x105Pa.

(6) The loss tangents (G"/G') which are the ratios of the loss modulus (G") and storage modulus (G') in the fixation temperature of a television layer should be 0.01-10.

(7) The storage modulus (G') in the fixation temperature of a television layer should be -50-+2500 to the storage modulus (G") in the fixation temperature of a toner.

(8) 50 degrees or less of tilt angles on the television layer of a melting toner should be 40 degrees or less preferably. Moreover, what satisfies the physical properties currently indicated by the patent No. 2788358 official report, JP,7-248637,A, JP,8-305067,A, JP,10-239889,A, etc. as a television layer is desirable.

[0028] The physical properties of the above (1) can be measured with differential-scanning-calorimetry equipment (DSC). moreover, the physical properties of (2) - (4) -- for example, the Shimadzu make -- it can measure using flow tester CFT-500. Moreover, the physical properties of (5) - (7) can be measured using a revolution mold rheometer (for example, the dynamic analyzer RADII by the LEO metric company). The physical properties of (8) can be measured by the approach indicated by JP,8-334916,A using the contact angle measuring device made from Kyowa Surface chemistry.

[0029] If it deforms at fixation temperature and a toner may be received as thermoplastics used for the television ingredient for electrophotography of this invention, especially the class will not be restricted. Preferably, the resin used as a binder of a toner and the resin of a same system are desirable. As a binder of a toner, since polyester resin is used abundantly, it is desirable to use polyester resin 20% of the weight or more preferably also as thermoplastics used for the television ingredient for electrophotography of this invention in that case. Moreover, a styrene-acrylic ester copolymer, a styrene-methacrylic ester copolymer, etc. are used preferably. The resin preferably used for below is explained.

[0030] Resin; polyurethane resin which has an ester bond as thermoplastics used for the television ingredient for electrophotography of this invention; Polyamide resin, ;, such as a urea-resin, -- polysulfone resin; -- polyvinyl chloride resin and polyvinylidene chloride resin -- Vinyl chloride vinyl acetate copolymer resin, vinyl chloride-propionic-acid vinyl copolymer resin, etc.; A polyvinyl butyral etc., Cellulosic resin, such as polyol resin, ethyl cellulose resin, and cellulose acetate resin etc.; Poly caprolactone resin, Styrene-maleic-anhydride resin, polyacrylonitrile resin, polyether resin, An epoxy resin, phenol resin, etc.; Polyolefin resin, such as polyethylene resin and polypropylene resin, The copolymer resin,; and such mixture or copolymers of olefins, such as ethylene and a propylene, and other vinyl monomers, such as acrylic resin, etc. can be mentioned.

[0031] In these thermoplastics, the resin which has an ester bond is desirable, for example, can use polyacrylic ester resin, such as polymethyl acrylate, poly butyl acrylate, polymethylmethacrylate, and poly butyl methacrylate, or polymethacrylic-acid-ester resin, polyester resin, polycarbonate resin, polyvinyl acetate resin, styrene acrylate resin, the styrene-methacrylic ester copolymer resin, vinyltoluene acrylate resin, etc.

[0032] The above-mentioned polyester resin A terephthalic acid, isophthalic acid, a maleic acid, A fumaric acid, a phthalic acid, an adipic acid, a sebacic acid, an azelaic acid, an abietic acid, Polycarboxylic acid components, such as a succinic acid, trimellitic acid, and pyromellitic acid (the sulfonic group, the carboxyl group, etc. may permute by these dicarboxylic acid components), Ethylene glycol, a diethylene glycol, propylene glycol, The diether derivative of bisphenol A and bisphenol A For example, (ethyleneoxide 2 addition product of bisphenol A, propylene oxide 2 addition product of bisphenol A), etc., It is obtained by condensation with alcoholic components (the hydroxyl group etc. may be permuted by these alcoholic components), such as Bisphenol S, 2-ethyl cyclohexyl dimethanol, neopentyl glycol, cyclohexyl dimethanol, and a glycerol.

[0033] As an example of polyester resin, the thing of a publication can be mentioned to JP,59-101395,A, JP,63-7971,A, JP,63-7972,A, JP,63-7973,A, and JP,60-294862,A. Moreover, as a commercial item, Toyobo Byron 290, Byron 200, Byron 280, Byron 300, Byron 103, Byron GK-140, Byron GK-130, tough Kao ton NE-382, tough ton -5, ATR-2009, ATR-2010 and Unitika Ely Tell UE3500 and UE3210, XA-8153, Pori Ester TP-220 made from Japanese synthetic chemistry, and R-188 grade can be used.

[0034] Although the thermoplastics used for the toner television layer of this invention can satisfy the above-mentioned television layer physical properties where a toner television layer is formed, choosing from inside is desirable. further -- desirable -- resin -- even when it is independent, what can give desirable physical properties to a toner television layer is mentioned. Moreover, it is also desirable to use

together the resin with which the above-mentioned physical properties differ two or more.
[0035] Moreover, as thermoplastics used for a toner television layer, a large thing is preferably used compared with the molecular weight of the thermoplastics used for the toner. However, depending on the relation of the thermodynamic property of toner resin and television layer resin, the relation of the above-mentioned molecular weight is not necessarily desirable. For example, when the softening temperature of television layer resin is high, as for molecular weight, it may be more desirable than toner resin that an EQC and television layer resin is smaller. using the mixture of the resin with which average molecular weight differs by the same presentation as thermoplastics used for a toner television layer -- things are also desirable. Moreover, the relation with the molecular weight of the thermoplastics used for the toner has the desirable relation currently indicated by JP,8-334915,A. Moreover, the thing larger than the molecular weight distribution of the thermoplastics used for the toner of the molecular weight distribution of the thermoplastics used for a toner television layer is desirable. furthermore -- as the thermoplastics used for a toner television layer -- JP,5-127413,B, 8-194394, 8-334915, and 8-334916 -- said -- what satisfies the physical properties currently indicated by 9-171265, 10-221877, etc. is used preferably.
[0036] Various additives can be used for the thermoplastics content layer of the television ingredient for electrophotography of this invention in order to improve the thermodynamic property of a resin layer. As an additive of such an object, a plasticizer, an organic and inorganic filler, an emulsification object, a distributed object, a cross linking agent, etc. are mentioned. The well-known plasticizer for resin can be used as a plasticizer used for this invention. In this description, a "plasticizer" is a compound group to which a toner television layer adjusts floating or making it flexible with the heat and/or pressure when a toner being established. As a plasticizer, it is a "chemistry handbook" (edited by Chemical Society of Japan, Maruzen) "plasticizer. - It can choose by referring to the theory, application-" (work edited by Koichi Murai, Saiwai Shobo), "the research top of a plasticizer", "the bottom of research of a plasticizer" (volume for high-polymer-chemistry associations), a "handbook rubber plastics combination chemical" (volume for rubber digest companies), etc.
[0037] Moreover, JP,59-83154,A which has indicated the plasticizer by the identifier of a high-boiling point organic solvent, a heat solvent, etc., 59-178451, 59-178453, 59-178454, 59-178455, 59-178457, 62-174754, 62-245253, 61-209444, 61-200538, 62-8145, 62-9348, 62-30247, 62-136646, 62-174754, 62-245253, 61-209444, 61-200538, 62-8145, 62-9348, 62-30247, 62-136646, ester (for example, phthalic ester --) which is indicated by each official report, such as JP,2-235694,A Phosphoric ester, fatty acid ester, abietic-acid ester, and adipate Sebacic-acid ester, azelate, and benzoates Butylate, epoxidation fatty acid ester, and glycolic-acid ester Propionic-acid ester, trimellitic acid ester, and citrate Sulfonates, carboxylate, and succinate Maleates, fumaric-acid ester, and phthalic ester amides (for example, fatty-acid amides --), such as stearic acid ester Ether, such as sulfo amides, alcohols, and PARAFINRU Compounds, such as polyolefine waxes (for example, polypropylene waxes and polyethylene wax etc.), lactone, polyethyleneoxy, silicone oil, and fluorine compounds, can be used.
[0038] Moreover, the polymer of low molecular weight can be comparatively used as a plasticizer. In this case, as for the thing with what [desirable especially desirable] has molecular weight lower than the resin set as the object of plasticization as molecular weight, the molecular weight of 15000 or less and further especially a desirable thing is a with a molecular weight of 5000 or less thing. Moreover, in the case of a polymer plasticizer, target resin and a polymer of the same kind are desirable. For example, to plasticization of polyester resin, polyester is desirable. Furthermore, oligomer can also be used as a plasticizer.
[0039] except for the compound mentioned above -- as a commercial item -- the Asahi Denka Kogyo make -- ADEKA sizer PN-170, PN-1430, C.P.HALL product PARAPLEX-G -25, G-30, G-40, **-ized Hercules product rosin ester 8 L-JA, ester R-95, pentalin 4851, FK 115, 4820, and 830, RUIZORU 28-JA, the pico lastic A75, the pico tex LC, and Kristallex 3085 grade can be mentioned.
[0040] In the television ingredient for electrophotography of this invention, it is desirable to use a plasticizer for at least one layer of the configuration layers formed on the base material. In the condition distributed micro in the layer is sufficient as a plasticizer, it is sufficient as it, and it is sufficient as it. [the condition which carried out phase separation micro the shape of a sea island] [the condition which fully carried out the mixed dissolution with other components, such as a binder,] It is desirable that it is the layer from which the stress produced besides a toner television layer in case a toner particle is embedded into a television ingredient although any, such as a protective layer, an interlayer, and an under coat, are sufficient is transmitted, the layer which adds a plasticizer has the desirable layer from which distortion (distortion by the material balances, such as physical distortion, such as elastic force and viscosity, a molecule, a binder principal chain, and a pendant part, etc.) which produces with stress further be transmitted, and it is desirable that it is the location of the layer which can ease such stress and distortion For example, the layer which adjoins a toner television layer, a toner television layer, a surface layer, etc. are desirable.
[0041] When weight adding all of the resin which constitutes a layer, other components, and a plasticizer is made into 100 mass %, the addition of the plasticizer of this invention has desirable 0.001 - 90 mass %, its 0.1 - 60 mass % is more desirable, and its 1 - 40 mass % is further more desirable. Moreover, a plasticizer may be used for the object, such as adjustment of slide nature (on the conveyance disposition by frictional force lowering), and amelioration of fixation section offset (the toner to the fixation section, and exfoliation of a layer), adjustment of curl balance, electrification adjustment (formation of a toner electrostatic image).
[0042] As a filler used for the television ingredient for electrophotography of this invention, the reinforcing agent for resin, a bulking agent, and what is well-known as reinforcement can be used, for example. As a filler, it can choose by referring to a "handbook rubber plastics combination chemical" (volume for rubber digest companies), "a new edition plastics compounding agent foundation and application" (TAISEI CORP.), a "filler handbook" (TAISEI CORP.), etc. Moreover, various inorganic pigments can be used as a filler. As an inorganic pigment, the well-known thing mentioned to titanium oxide, a calcium carbonate, a silica, talc, a mica, an alumina, other "handbook rubber plastics combination chemicals" (volume for rubber digest companies), etc. can be used.
[0043] As a cross linking agent used for the television ingredient for electrophotography of this invention, the compound which has an epoxy group, an isocyanate radical, an aldehyde group, an activity halogen radical, an activity methylene group, an acetylenic group, and other well-known reaction radicals in two or more piece intramolecular, for example as a reaction radical can be used. Moreover, a compound with two or more radicals which can form association by hydrogen bond, ionic bond, coordinate bond, etc. other than the radical which forms the above-mentioned covalent bond can also be used. Moreover, a well-known compound can also be used by the coupling agent for resin, a curing agent, a polymerization agent, the polymerization promotor, the coagulant, the film formation agent, a film formation assistant, etc. As an example of a coupling agent, chlorosilicanes, vinylsilane, epoxy silanes, amino silanes, alkoxy aluminum chelates, a titanate coupling agent, etc. are mentioned, and also the well-known thing mentioned to the "handbook rubber plastics combination chemical" (volume for rubber digest companies) etc. can be used.
[0044] A water-soluble polymer can be used as resin for toner television layers of the television ingredient for electrophotography of this invention. As a water-soluble polymer, if it is a water-soluble polymer, the presentation, geometry, the molecular structure, molecular weight, molecular weight distribution, and a gestalt are not specified. As an example of the water solubilization radical of a polymer, a

hydroxyl group, a carboxylic-acid radical, the amino group, an amide group, or a ether group is mentioned. As an example of a water-soluble polymer, what is indicated by 26 pages, 651 pages of No. 18,716, 873-874 pages of No. 307,105, and the JP,64-13546,A (71) - (75) page of the research disclosure No. 17,643 is mentioned. Specifically, a vinyl-pyrrolidone-vinyl acetate copolymer, a styrene-vinyl-pyrrolidone copolymer, a styrene maleic anhydride copolymer, water-soluble polyester, water-soluble polyurethane, water-soluble nylon, and a water-soluble epoxy resin can be used.

[0045] Moreover, moisture powder type resin, such as moisture powder acrylic resin, moisture powder polyester resin, moisture powder polystyrene resin, and moisture powder urethane resin; out of water solutions, such as emulsions, such as an acrylic resin emulsion, a polyvinyl acetate emulsion, and an SBR (styrene butadiene rubber) emulsion, or these copolymers, mixture, and a thing of cation denaturation, it can choose suitably and two or more sorts can be combined. Moreover, as for gelatin, it is also desirable for what is necessary to be just to choose from the so-called deliming gelatin which reduced the content of liming gelatin, acid-treatment gelatin, calcium, etc. according to the various objects, to combine, and to use.

[0046] When the binder resin of a toner is polyester resin, also as for the resin of a toner television layer, it is desirable that it is moisture powder system polyester. as the commercial item of moisture powder polyester -- for example, the Toyobo make -- BAIRONARU MD-1250, MD-1930, the Goo Chemical plus coat Z-446 and Z-465, RZ-96, and the product made from ****** ink -- ES-611, ES-670, and the product made from the Takamatsu fats and oils -- PESUREJIN A-160P, A-210, and A-620 grade are mentioned. To the preservation before a print, beyond the room temperature of the membrane formation temperature of the polymer to be used is desirable, and it is desirable to fixation of a toner particle. [of 100 degrees C or less]

[0047] Mean particle diameter can use a less than 3-micrometer particle for the toner television layer of this invention as a toner television ingredient. As a less than 3-micrometer particle, an inorganic pigment is preferably used for mean particle diameter. A silica pigment, an alumina pigment, a titanium-dioxide pigment, a zinc oxide pigment, a zirconium dioxide pigment, micaceous iron oxide, the white lead, a lead-oxide pigment, a cobalt oxide pigment, strontium chromate, a molybdenum system pigment, a smectite, a magnesium-oxide pigment, a calcium-oxide pigment, a calcium-carbonate pigment, and a mullite are contained in the example of an inorganic pigment. A silica pigment and an alumina pigment are desirable. Two or more kinds of particles may be used together.

[0048] A spherical silica and an amorphism silica are contained in a silica pigment. A silica pigment is compoundable by dry process, the wet method, or the aerogel method. Surface treatment of the front face of a hydrophobic silica particle may be carried out with a trimethylsilyl radical or silicone. Especially a colloid silica is desirable. As for the mean particle diameter of a silica pigment, it is desirable that it is 4-120nm, and it is still more desirable that it is 4-90nm. As for a silica pigment, it is desirable that it is porosity. As for the average aperture of a porosity silica pigment, it is desirable that it is 50-500nm. Moreover, as for the average hole volume per weight of a porosity silica pigment, it is desirable that it is 0.5 - 3 ml/g.

[0049] An anhydrous alumina and hydrated alumina are contained in an alumina pigment. As a crystal mold of an anhydrous alumina, alpha, beta, gamma, delta, zeta, eta, theta, kappa, rho, or chi can be used. Hydrated alumina is more desirable than an anhydrous alumina. Things can be carried out using monohydrate or three hydrates as hydrated alumina. Pseudo-boehmite, boehmite, and a diaspore are contained in monohydrate. three hydrates -- a jib -- a site and bayerite are contained. As for the mean particle diameter of an alumina pigment, it is desirable that it is 4-300nm, and it is still more desirable that it is 4-200nm. As for an alumina pigment, it is desirable that it is porosity. As for the average aperture of a porosity alumina pigment, it is desirable that it is 50-500nm. As for the average hole volume per weight of a porosity alumina pigment, it is desirable that it is 0.3 - 3 ml/g.

[0050] Hydrated alumina is compoundable by the approach of hydrolyzing the sol gel process or ulmin acid alkali which ammonia is added [alkali] and settles it in aluminum salting in liquid. An anhydrous alumina can be obtained by dehydrating hydrated alumina with heating. The amount of the inorganic pigment used is a dry weight ratio to the binder of the layer to add, and it is desirable that it is five to 2000 mass %.

[0051] The time of various addition can be used for a toner television layer besides the additive which adjusts the thermodynamic property of the above-mentioned layer. It is desirable to make the television ingredient for electrophotography of this invention contain an electrification regulator in order to prevent electrification adhesion of the object which adjusts the imprint of a toner, adhesion, etc., and a television ingredient. As an electrification regulator, each of well-known antistatic agents and electrification regulators is conventionally usable, and a polyelectrolyte besides being surfactants, such as a cation system surfactant, an anion system surfactant, an amphoteric surface active agent, and the Nonion system surfactant, etc., conductive metallic oxide, etc. can be used.

[0052] For example, although the Nonion system antistatic agents, such as anion system antistatic agents, such as cation system antistatic agents, such as quarternary ammonium salt, a polyamine derivative, cation denaturation polymethylmethacrylate, and cation denaturation polystyrene, alkyl phosphate, and an anion system polymer, fatty acid ester, and polyethylene oxide, are mentioned, it is not limited to these. When a toner has a negative charge, as an electrification regulator, a cation or Nonion is desirable.

[0053] As conductive metallic oxide, ZnO, TiO2, SnO2, aluminum 2O3, In2O3, and SiO2, MgO, BaO and MoO3 can be mentioned. These may be used independently and may use these multiple oxides. Moreover, a metallic oxide may make a different-species element able to contain further, for example, aluminum, In, etc. can make Sb, Nb, a halogen, etc. contain to SnO(s)2, such as Nb and Ta, to TiO2 to ZnO (doping).

[0054] As for the toner television layer of this invention, and other layers, it is desirable to have the surface electric resistance of the range of 1x106 to 1x1015 (on conditions of 25 degrees C and 65%RH). In the case of less than 1x106ohms, the concentration of the toner image with which the amount of toners at the time of a toner being imprinted by the television layer is not enough with an image, and is obtained is low, when, exceeding 1x1015 ohms on the other hand, the charge beyond the need is generated at the time of an imprint, and a toner is not fully imprinted, but the concentration of an image becomes low. Since it is electrified during the handling of the television ingredient for electrophotography, and dust tends to adhere and it becomes easy to generate misfeed, a double feed, a discharge mark, toner imprint NUKE, etc. at the time of a copy, it is not desirable.

[0055] the range of the optimal surface electric resistance of a transparence resin layer -- the range of 1010 - 1013 ohm/cm 2 -- desirable -- 5x1010 - 5x1012 ohm/cm 2 It is the range and the amount of the antistatic agent used is put in according to this. a base material -- receiving -- the surface electric resistance of the field of a television layer and an opposite hand -- the range of 5x108 - 3.2x1010 ohm/cm 2 -- the range of 1x109 - 1x1010 ohm/cm 2 is preferably suitable. Measurement of surface electric resistance is JIS. K Based on 6911, under the same environment, gas conditioning of the sample is carried out for 8 hours or more to the bottom of the environment of the temperature of 20 degrees C, and 65% of humidity, and the ADVANTEST CORP. make R8340 is used, and it is the conditions of applied-voltage 100V, and is obtained by measuring, after energizing and passing for 1 minute.

[0056] A fluorescent brightener, white pigments, a colored pigment, a color, etc. can be used for the television ingredient for electrophotography of this invention in order to improve image quality, especially a whiteness degree. A fluorescent brightener has absorption in the near-ultraviolet section, it is the compound which emits fluorescence to 400-500nm, and a well-known thing can be used for it. As a fluorescent brightener used for this invention, it is KVeenRataraman piece"The. Chemistry of Synthetic The compound indicated in Dyes"V Maki of Chapter 8 can be mentioned. More specifically, a stilbene system compound, a coumarin system compound, a biphenyl system compound, a benzoxazoline system compound, the North America Free Trade Agreement RUIMIDO system compound, a pyrazoline system compound, a KARUBO styryl system compound, etc. are mentioned. As those examples, the Sumitomo Chemical white full furs PSN, PHR, HCS, PCS, and B, UVITEX-alumnus made from Ciba-Geigy, etc. are mentioned.
[0057] The inorganic pigment (others [calcium carbonate / titanium oxide and]) stated by the term of a filler and the term of a pigment with a fine particle size as white pigments can use. the various pigments indicated by JP,63-44653,A etc. as a colored pigment, and an azo pigment (azo lake; -- carmine 6B --) Red 2B, insoluble azo; Monoazo IERO, Diarylide Yellow, pyrazolo Orange, Balkan Peninsula Orange, a condensation azo system; Chromophthal yellow, chlromophtal red, a polycyclic type pigment (phthalocyanine system; -- a copper copper phthalocyanine blue and copper Phthalocyanine Green --) SHIOKISAJIN system; Dioxazine violet, isoindolinone system; isoindolinone IERO, Indanthrene system; -- perylene and peri non, flavanthrone, a thioindigo, and a lake pigment (Malachite Green --) rhodamine B, Rhodamine G, Victoria blue B, and an inorganic pigment (an oxide --) A titanium dioxide, red ocher, sulfate; precipitated barium sulphate, carbonate; precipitated calcium carbonate, a silic acid salt; hydrated silica salt, a silicic-acid-anhydride salt, a metal powder; aluminium powder, bronze powder, zinc dust, carbon black, the chrome yellow, Berlin blue, etc. are mentioned.
[0058] Well-known various colors can be used as a color. As an oil color, an anthraquinone system compound, an azo system compound, etc. are mentioned. As an example of a water-insoluble nature color C. The I.Vat violet 1, the C.I.Vat violet 2, the C.I.Vat violet 9, the C.I.Vat violet 13, the C.I.Vat violet 21, the C.I.Vat blue 1, the C.I.Vat blue 3, C.I.Vat blue 4, C. Vat dye of the I.Vat blue 6, the C.I.Vat blue 14, the C.I.Vat blue 20, and C.I.Vat blue 35 grade, C. The disperse dye of I. De Dis parsing violet 1, the C.I. De Dis parsing violet 4, the C.I. De Dis parsing violet 10, the C.I. De Dis parsing blue 3, the C.I. De Dis parsing blue 7, and C.I. De Dis parsing blue 58 grade, C. I. solvent violet 13, the C.I. solvent violet 14, the C.I. solvent violet 21, the C.I. solvent violet 27, the C.I. solvent blue 11, the C.I. solvent blue 12, C.I. solvent blue 25, C. The oil color of I. solvent blue 55 grade can be mentioned. Moreover, the colored coupler used by the film photo can also be used preferably.
[0059] The toner image formation side of the television ingredient for electrophotography of this invention has the desirable one where a whiteness degree is higher. As a whiteness degree, he is CIE. In 1976 (L*a*b*) color space, it is desirable that L* value is 80 or more, and it is 90 or more still more preferably 85 or more more preferably. Moreover, the thing neutral as much as possible of a white tint is desirable. As a white tint, in L*a*b* space, as for the value of 2 (a*)+(b*) 2, 50 or less are desirable, and it is five or less still more preferably 18 or less more preferably.
[0060] Moreover, the toner image formation side of the television ingredient for electrophotography of this invention has the desirable one where glossiness is higher. As glossiness, in all the fields of from white without a toner until [of the maximum concentration] black, it is desirable that 45-degree glossiness is 30 or more, it is more desirable still more desirable that it is 60 or more, and it is 90 or more especially preferably 75 or more. However, as for glossiness, it is desirable that it is 110 or less. When 110 is exceeded, there is an inclination to become like metallic luster and for image quality to be inferior. Glossiness is JIS. Z It can measure based on 8741.
[0061] Moreover, the toner image formation side of the television ingredient for electrophotography of this invention has the desirable one where smooth nature is higher, when attaining the object of this invention. the need -- heat -- and -- or it is desirable to apply a pressure to a television ingredient and to raise smooth nature more. As for the temperature of data smoothing, it is desirable that it is 50 degrees C or more. Smooth nature can be raised and the plate calender processing for card board finishing, super calender processing, the super-altitude gloss processing that used the Flint machine and the friction calender can be used as the above-mentioned processing for acquiring desired glossiness, for example. Moreover, the glazed finish method of a publication etc. can be used for "paper-making engineering." As smoothness, arithmetic mean granularity (Ra) has desirable 1 micrometer or less, and 0.5 micrometers or less are 0.2 micrometers or less still more preferably more preferably. Arithmetic mean granularity is JIS. B 0601 B 0651 B It can measure based on 0652.
[0062] Especially the means for carrying out reflected light distribution to the surface glossiness of the television ingredient for electrophotography of this invention within the limits of predetermined is not restricted. No matter it may manufacture with what means, it is included by the range of this invention if it is the television ingredient for electrophotography which fulfills the conditions of a formula 1 and a formula 2. Generally reflected light distribution can stop the irregularity of the substrate of a toner television layer, and can be made small by making smooth the shape of a spreading side of a toner television layer. That is, reflected light distribution can be suppressed by using the laminated base material, making it dry slowly at low temperature, after forming a toner television layer, or performing data smoothing. Reflected light distribution can be adjusted to request within the limits, combining these approaches suitably.
[0063] A protective layer can be prepared in the front face of a toner television layer at the television ingredient for electrophotography of this invention for the object, such as protection of a front face, amelioration of shelf life, amelioration of handling nature, grant of note nature, amelioration of device permeability, and grant of anti offset nature. The number of protective layers may be one and they may consist of a layer more than two-layer. Various kinds of thermoplastics, thermosetting resin, a water-soluble polymer, etc. can be used for a protective layer as a binder. A desirable toner television layer and a desirable thing of the same kind are used. However, a thermodynamic property and electrostatic property etc. does not need to be the same as a toner television layer, and is optimized, respectively. Each additive which can be used in a toner television layer can be used for a protective layer. An electrification regulator, a mat agent, a slipping agent, a release agent, etc. are preferably used especially for a protective layer. The example of the next additive can also be used in addition to a protective layer.
[0064] As for the re-surface layers (for example, surface protective layer etc.) of the television ingredient for electrophotography of this invention, it is desirable from a fixable viewpoint that compatibility with a toner is good. Specifically, it is desirable that contact angles with the fused toner are 40 or less degrees and 0 times or more.
[0065] As for the television ingredient for electrophotography of this invention, it is desirable not to paste up with a fixation heating component at the time of fixation. Therefore, as for the 180-degree exfoliation strength in fixation temperature with a fixation member, it is desirable that they are 0.1Ns / 25mm or less, and it is more desirable that they are 0.041Ns / 25mm or less. 180-degree exfoliation strength uses the surface raw material of a fixation member, and is JIS. Based on the approach of a publication, it can measure to K6887. Various well-known things are mentioned as a slipping agent used for the television ingredient for electrophotography of this invention. High-class sodium alkylsulfate and higher-fatty-acid higher-alcohol ester, Carbowax, high-class alkyl phosphoric ester, a silicone compound,

denaturation silicone, hardenability silicone, etc. are contained in the example of a slipping agent. Moreover, a polyolefine wax, fluorine system oil, a fluorine system wax, a KARUBANA wax, a micro crystallin wax, and a silane compound are also used preferably.
[0066] About the slipping agent which can be used by this invention A U.S. Pat. No. 2882157 description, the patent No. 3121060 description, The patent No. 3850640 description, the France patent No. 2180465 description, The British patent No. 955061 description, the patent No. 1143118 description, The patent No. 1263722 description, the patent No. 1270578 description, the patent No. 1320564 description, The patent No. 1320757 description, the patent No. 2588765 description, the patent No. 2739891 description, The patent No. 3018178 description, the patent No. 3042522 description, the patent No. 3080317 description, The patent No. 3082087 description, the patent No. 3121060 description, the patent No. 3222178 description, The patent No. 3295979 description, the patent No. 3489567 description, the patent No. 3516832 description, It is indicated by the patent No. 3658573 description, the patent No. 3679411 description, the patent No. 3870521 description, JP,49-5017,A, a 51-141623 official report, a 54-159221 official report, a 56-81841 official report, and RD No. 13969.
[0067] As for the amount of the slipping agent used, it is desirable that it is 5 - 500 mg/m2. It is 10 - 200 mg/m2 more preferably. Since it is hard to dissolve in an organic solvent, as for the slipping agent of a wax system, it is desirable to prepare a water distribution object, to prepare dispersion liquid with a thermoplastics solution, and to apply. In this case, the slipping agent of a wax system exists in the form of a particle in thermoplastics. In this case, as for the amount of the slipping agent used, it is desirable that it is 5 - 10000 mg/m2. It is 50 - 5000 mg/m2 more preferably.
[0068] A back layer can be prepared in the above-mentioned toner television layer and above-mentioned opposite hand of a base material at the television ingredient for electrophotography of this invention for the object, such as rear-face output fitness grant, rear-face output image quality amelioration, curl balance amelioration, and device permeability amelioration. Moreover, the configuration of a back layer may be the same as that of a toner television layer side because of double-sided output fitness amelioration. The above-mentioned additive can be used for a back layer. It is desirable to use the above-mentioned mat agent, a slipping agent, an electrification regulator, etc. especially. The back layer may consist of one layer and may consist of more than two-layer. Moreover, when mold-release characteristic oil is used for the fixing roller etc. for the offset prevention at the time of fixation, it is desirable to give oil absorptivity to a rear face.
[0069] An adhesion amelioration layer can be prepared in the television ingredient for electrophotography of this invention in order to improve adhesion with a base material and the layer of a toner television layer and others. The above-mentioned additive can be used for an adhesion amelioration layer. It is desirable to use the above-mentioned cross linking agent especially. Moreover, since the receptiveness of a toner is improved, a cushion layer can be prepared in the television ingredient for electrophotography of this invention. Furthermore, an interlayer can be prepared in the television ingredient for electrophotography of this invention in addition to the various above-mentioned layers.
[0070] Various additives can be used for the television ingredient for electrophotography of this invention for stability amelioration of an output image, and the own stability amelioration of a television layer. As an additive for this object, various well-known antioxidants, an antioxidant, a degradation inhibitor, anti-ozonant, an ultraviolet ray absorbent, light stabilizer, antiseptics, an antifungal agent, etc. are used. As an antioxidant, a chroman compound, a coumarane compound, a phenolic compound (an example, hindered phenol), a hydroquinone derivative, a hindered amine derivative, and a SUPIRO in out compound are contained. The antioxidant is indicated by JP,61-159644,A. Moreover, the thing of a publication is mentioned to "2nd edition of handbook rubber plastics combination chemical revision" (1993, rubber digest company) p76-121 as an antioxidant.
[0071] A benzotriazol compound (U.S. Pat. No. 3533794 description publication), 4-thiazolidone compound (U.S. Pat. No. 3352681 description publication), a benzophenone compound (JP,46-2784,A publication), and an ultraviolet absorption polymer (JP,62-260152,A publication) are contained in the example of an ultraviolet ray absorbent. The metal complex is indicated by a U.S. Pat. No. 4241155 description, the patent No. 4245018 description, the patent No. 4254195 description, JP,61-88256,A, a 62-174741 official report, a 63-199248 official report, JP,1-75568,A, and the 1-74272 official report. Moreover, the ultraviolet ray absorbent of a publication and light stabilizer are also preferably used for "2nd edition of handbook rubber plastics combination chemical revision" (1993, rubber digest company) p122-137.
[0072] In addition to this, a thing well-known as an additive for photographs can be used for the television ingredient for electrophotography of this invention. For example, as an additive for photographs, it is indicated by RD No. (December, 1978) 17643, RD No. (November, 1979) 18716, and RD No. (November, 1989) 307105, and the applicable part is summarized below.
[0073]
[A table 1]

添加剤の種類	RD17643	RD18716	RD307105
増白剤	24頁	648頁右欄	868頁
安定剤	24～25頁	649頁右欄	868～870頁
光吸収剤、紫外線吸収剤	25～26頁	649頁右欄	873頁
色素画像安定剤	25頁	650頁右欄	872頁
硬膜剤	26頁	651頁左欄	874～875頁
バインダー	26頁	651頁左欄	873～874頁
可塑剤、潤滑剤	27頁	650頁右欄	876頁
塗布助剤、界面活性剤	26～27頁	650頁右欄	875～876頁
スタチック防止剤	27頁	650頁右欄	876～877頁
マット剤	-	-	878～879頁

[0074] The configuration of the television ingredient for electrophotography will not be restricted especially if it is the configuration which can be used for record by the electrophotography approach. You may be the shape of a sheet, and band-like, and may be a roll-like long volume. From a viewpoint of the effectiveness of a print, it is desirable that it is a roll-like long volume. When it is a roll-like long volume, it is desirable to judge to the die length of an end product inside a printer, and it is desirable to use a printer with the function. As other examples of the television ingredient for electrophotography of this invention, the photoprint of L size or 2L sizes, a photograph, the noun containing a pattern and a ticket, a calender, the photoprint that marginal decoration attached, a seal print, etc. are mentioned, and all are suitable. Moreover, if the television ingredient for electrophotography of this invention is used, a print without the blank paper part which is not printed on an edge can be created by the electrophotography print method. Moreover, these smallness size print can also be supplied with the gestalt which put the perforation into the size version sheet.

[0075] The toner used in order to form an image in the television ingredient for electrophotography of this invention will not be restricted especially if it is the toner used for the usual xerography. The toner used for a xerography is usually constituted considering a coloring agent and binding resin as a principal component. As a coloring agent which binding resin is made to contain, if it is a well-known thing, what so-called ** can also be used. For example, carbon black, the aniline bule, cull coil blue, chrome yellow, Ultra marine blue, E. I. du Pont de Nemours oil red, quinoline yellow, Methylene-blue chloride, a copper phthalocyanine blue, the Malachite Green OKISA rate, Lamp black, a rose bengal, C. I. pigment red 48: 1, C.I. pigment red 122, C.I. pigment red 57:1, C.I. pigment yellow 97, C.I. pigment yellow 12, C.I. pigment yellow 17, and C.I. pigment blue 15: 1 and the C.I. pigment blue 15:3 can be illustrated as a typical thing. The content of a coloring agent has 2 - 8% of the weight of the desirable range. If the content of a coloring agent becomes less than 2 % of the weight, tinting strength will become weak, and if it increases more than 8 % of the weight, the transparency of a color toner will get worse.

[0076] As binding resin used for this invention, styrene, such as styrene and chloro styrene Monoolefins, such as ethylene, a propylene, a butylene, and an isoprene Vinyl ester, such as vinyl acetate, propionic-acid vinyl, benzoic-acid vinyl, and butanoic acid vinyl A methyl acrylate, an ethyl acrylate, butyl acrylate, acrylic-acid dodecyl, Acrylic-acid octyl, acrylic-acid phenyl, a methyl methacrylate, ethyl methacrylate, alpha-methylene aliphatic series monocarboxylic acid ester, such as methacrylic-acid butyl and methacrylic-acid dodecyl A homopolymer and copolymers, such as vinyl ether, such as vinyl methyl ether, vinyl ethyl ether, and vinyl butyl ether, a vinyl methyl ketone, a vinyl hexyl ketone, and a vinyl isopropenyl ketone, can be illustrated. [, such as vinyl ketones,] As typical binding resin, polystyrene resin, polyester resin, a styrene-acrylic-acid alkyl copolymer, a styrene-alkyl methacrylate copolymer, a styrene acrylonitrile copolymer, a styrene-butadiene copolymer, a styrene maleic anhydride copolymer, polyethylene resin, and polypropylene resin can be raised especially. Furthermore, polyurethane resin, an epoxy resin, silicone resin, polyamide resin, denaturation rosin, paraffin, and waxes can be mentioned. It is desirable to use the polyester resin of the same system as what was especially used for the toner television layer in the above-mentioned television ingredient for electrophotography also in these resin.

[0077] Although the desirable physical properties of the resin used for the toner television layer in the above-mentioned television ingredient for electrophotography and the same physical properties of the binding resin used for this invention are desirable, the relation with television layer resin physical properties is as above-mentioned. The binding resin used for this invention has that desirable whose storage modulus measured by angular-frequency 10 rad/sec in 150 degrees C is 10-300Pa. As for the binding resin used for this invention, it is desirable to have the Sharp melt nature which is indicated by JP,8-305067,A etc.

[0078] Although the toner in this invention is constituted considering the above-mentioned coloring agent and binding resin as a principal component, as for the mean particle diameter, the range of 3-15 micrometers and the thing which is in the range of 4-8 micrometers especially are used preferably. Moreover, as for storage-modulus G' (it measures by the angular frequency of ten rads / sec) in 150 degrees C of the toner itself, it is desirable that it is in the range of 10-200Pa.

[0079] Moreover, an external additive may be added to the toner in this invention. As an external additive, inorganic compound impalpable powder and an organic compound particle are used. An inorganic compound particle can illustrate SiO2, TiO2, aluminum 2O3, CuO, ZnO, SnO2 and Fe 2O3, MgO, BaO and CaO, K2O, Na2O, ZrO2, CaO-SiO2, K2O-(TiO2) n, aluminum2O3 and 2SiO2, CaCO3, MgCO3 and BaSO4, and MgSO4 grade. Moreover, resin impalpable powder, such as impalpable powder, such as metal salts, such as a fatty acid or its derivative, and this, fluororesin, polyethylene resin, and acrylic resin, can be used for an organic compound particle.

[0080] Especially the approach of forming an image in the television ingredient for electrophotography of this invention is not restricted. All are applicable if it is the usual xerography. For example, a color picture can be preferably formed in the television ingredient for electrophotography of this invention. Formation of a color picture can be performed using the electrophotography equipment which can

form a full color image as shown in drawing 1. The electrophotography equipment of drawing 1 is divided roughly into the television ingredient conveyance system prepared in the body bottom of equipment, the latent-image formation section prepared by approaching the toner image medium imprint section in the center section of the body of equipment, and approaching the upper part at the toner image medium imprint section, and the development section currently arranged by approaching with said latent-image formation section. In addition, if it is electrophotography equipment usually used, all are applicable to this invention.

[0081]

[Example] An example is given to below and this invention is explained to it still more concretely. The ingredient shown in the following examples, the amount used, a rate, the content of processing, procedure, etc. can be suitably changed, unless it deviates from the meaning of this invention. Therefore, the range of this invention is not limited to the example shown below.

[0082] Spreading desiccation was carried out in the wire coating machine so that the thickness after drying the constituent for television layers of the class indicated by the table 2 on the base material of the class indicated by the <manufacture of television ingredient for electrophotography> table 2 might be set to 15 micrometers. Data smoothing was performed if needed and the television ingredient for electrophotography was created as the desiccation zone was adjusted to the specific temperature indicated by the table 2, and was dried for 3 minutes and it was further indicated by the table 2 immediately after spreading. In addition, the television ingredient 15 was directly used with the base material C, without forming a television layer. The class of base material indicated by the table 2, the class of constituent for television layers, desiccation conditions, and data smoothing are as being shown below.

[0083] The surface polyethylene layer with a thickness of 10 micrometers it is thin on one side of the pulp layer which <base material B1> thickness becomes from the paper of fine quality (LBKP/NBSP=6/4, consistency 1.053 g/cm3) which is 160 micrometers from medium density polyethylene (consistency 0.939 g/cm3, melting point of 120 degrees C) was formed. The rear-face polyethylene layer with a thickness of 25 micrometers it is thin from low density polyethylene (3 consistency melting point of 107 degrees C of 0.918g/cm) was formed in the reverse side of a pulp layer.

[0084] Thus, after carrying out corona discharge treatment of the polyethylene layer on the rear face of a table of the prepared base material, it applied and dried in the wire coating machine, and undercoat was prepared, and the following back layer constituent was applied in the wire coating machine, it dried, the back layer was prepared so that the concentration after desiccation might become 1.0 g/m2 in a rear face, and it considered as the base material B1 so that the thickness after drying the following constituent for undercoat in a front face might be set to 0.1 micrometers. In addition, when forming a television layer constituent on a base material B1, after performing corona discharge treatment on undercoat, it formed on it.

[0085]

Constituent for undercoat: Gelatin Five weight sections Water 95 weight sections Constituent for back layers: Polyester resin (BAIRONARU MD-1930, Toyobo make)

90 weight sections Mat agent (the EPO star L15, NIPPON SHOKUBAI make) 50 weight sections Water The 10000 weight sections [0086] The cast-coated paper (the Oji Paper make, mirror coat platinum, basis weight 174.4 g/m2) of <base material B-2> marketing was used as base material B-2.

[0087] The <base material B3> basis weight 120/the paper of fine quality (the Oji Paper make, O.K. prince superior quality, the basis weight of 127.9g/m2) of m2 was used as a base material B3.

[0088]

<Television layer constituent C1> Polyester resin (the tough ton U-5, Kao make) The 100 weight sections Titanium dioxide (TIPAQUE RA-220, Ishihara Sangyo make) 15 weight sections Methyl ethyl ketone The 400 weight sections [0089]

<Television layer constituent C2> Polyester resin (made in [Kao] Byron 200) The 100 weight sections Titanium dioxide (TIPAQUE RA-220, Ishihara Sangyo make) 15 weight sections Methyl ethyl ketone The 400 weight sections [0090]

<Television layer constituent C3> Polyester resin (a terephthalic acid, isophthalic acid, a sebacic acid, ethylene glycol, the copolymer of a sebacic acid, a polymerization mole ratio = 2:1.5:1.5:5) The 100 weight sections Titanium dioxide (TIPAQUE RA-220, Ishihara Sangyo make) 15 weight sections Methyl ethyl ketone The 400 weight sections [0091] Temperature setting out of the desiccation zone immediately after <desiccation condition> spreading (desiccation during 3 minutes each)

D1 110-degree-CD2 100-degree-CD3 90-degree-CD4 80-degree-CD5 70 degrees C [0092] <Data smoothing> Nothing E1 which does not perform data smoothing It is operation E2 about the glazed finish use the heat roll which gave mirror finish and according to **** at 70 degrees C. It is operation [0093] about the glazed finish use the heat roll which gave mirror finish and according to **** at 85 degrees C. About each television ingredient for electrophotography of which <assessment of gloss property> creation was done, it is JIS. Specular gloss Gs (45 degrees) was measured according to Z8741. Moreover, JIS According to 45-degree specular gloss measuring method of Z8741, the light-receiving angle was changed into 42 degrees and 48 degrees, respectively, specular gloss Gs (42 degrees) and Gs (48 degrees) was measured, and it asked for the reflected light distribution GsP (45 degrees **3 degrees) according to the formula 1. Performing measurement using the digital deflection glossmeter (the Suga Test Instruments Co., Ltd. make, type UGV-6P), the measurement aperture presupposed that the diameter of 8mm is circular.

[0094] The television ingredient for electrophotography created [which created and <-print-examined] was cut out to A4, it set to the color laser printer (DocuColor1250, Fuji Xerox make), and the image from a computer was printed. The image printed four sorts of the portrait of white, gray (R=G=B=40% of an image), black, and a woman. The specular gloss after a print was measured about the image of white, gray, and black. Moreover, about the female portrait, ten test subjects evaluated gloss texture in the following five steps, and recorded the average.

5 very desirable 4 Desirable 3 Permissible level 2 Dysphoria 1 dramatically unpleasant -- these test results are collectively shown in a table 2. In addition, the example of this invention was all good about ZARATSUKI or lack, and was good. [of brittleness]

[0095]

[A table 2]

画像形成材料No.	製造条件				評価							
	支持体	受像層組成物	乾燥条件	平滑化処理	GsP(45°)						GsP(45°±3°)	光沢質感
					前	W	G	G-W	B	B-W	前	
1(本発明)	B1	C1	D3	なし	87	86	70	-16	89	3	13	3.4
2(本発明)	B1	C1	D4	なし	88	84	71	-13	87	3	10	3.8
3(本発明)	B1	C1	D5	なし	88	85	73	-12	88	8	7	4.3
4(本発明)	B1	C1	D5	E1	91	91	76	-15	91	0	4	4.6
5(本発明)	B1	C1	D5	E2	92	91	78	-13	92	1	2	4.8
6(本発明)	B1	C2	D5	なし	85	85	50	-35	63	-22	14	3.1
7(本発明)	B1	C3	D5	なし	78	79	80	1	93	14	10	3.0
8(本発明)	B2	C1	D5	なし	52	65	52	-13	74	9	12	3.2
9(本発明)	B2	C1	D4	なし	45	51	40	-11	51	0	14	3.1
10(比較例)	B1	C1	D1	なし	76	78	70	-8	89	11	30	2.6
11(比較例)	B1	C1	D2	なし	82	83	72	-11	89	6	21	2.8
12(比較例)	B2	C1	D2	なし	44	43	33	-10	52	9	22	2.5
13(比較例)	B2	C1	D1	なし	42	42	35	-7	58	16	30	2.0
14(比較例)	B3	C1	D5	なし	22	22	36	14	58	36	8	2.0
15(比較例)	B3	なし	なし	なし	13	13	35	22	75	62	8	1.3

(注) 前：プリント前　W：白　G：グレー　B：黒

[0096] moreover, a commercial color laser printer -- concrete -- a Fuji Xerox full color laser beam printer (A color 629 --) Color laser window CLW-3320PS, Xerox color Copiers (DocuColor 5750), Seiko Epson make LP-8000C, product made from the Casio electronic industry COLOR PAGEPRESTO N4-ST, product made from canon COLOR LASER SHOT LBP-2030 and made in queue em S Japan magicolor 2 and Konica make Color LaserBit KL-2010 Sharp make JX-8200, Hitachi make BEAMSTAR-RW, Minolta make Color Page Pro Also about the case where it prints in PS, the same result as a table 2 was obtained.

[0097]

[Effect of the Invention] According to this invention, the toner image excellent in gloss texture can be formed. For this reason, the television ingredient for electrophotography of this invention is very useful as an image recording ingredient for [various] printers.

[Translation done.]

* NOTICES *

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the television ingredient for electrophotography. It is suitable for the photograph application and, more specifically, is related with the television ingredient for electrophotography which can form the image which was excellent in gloss texture.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] With highly-minute-izing of image marking, or the formation of many gradation, the electro photographic printer of a photograph output application which aimed at carrying out color repeatability, resolution, etc. just like a film photo various-kinds-develops, and has come to be marketed. However, although the color repeatability and resolution of an electro photographic printer were improving, the print image obtained by these printers was not what may be satisfied compared with the conventional silver salt photoprint. As for it, compared with a silver salt photoprint, surface gloss is inadequate, and the cause is insufficient of gloss texture.
[0003] Generally, the glossiness of a reflective print ingredient is JIS. Z8741 and JIS It is expressed with the specular gloss specified to P8142. The 45-degree specular gloss by JISZ8741 of a commercial silver salt photoprint is about 90. Then, preparing the toner television layer containing thermoplastics on a base material as an attempt which raises the glossiness of an electrophotography print even on the level of such a silver salt photoprint is proposed (JP,4-212168,A, JP,8-211645,A, Japanese-Patent-Application-No. No. 368980 [11 to] description). If such a toner television layer is prepared, the specular gloss of a television ingredient can be raised notably.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] According to this invention, the toner image excellent in gloss texture can be formed. For this reason, the television ingredient for electrophotography of this invention is very useful as an image recording ingredient for [various] printers.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, it became clear using the above means equivalent to a silver salt photoprint or that the print of the gloss texture exceeding the silver salt photoprint average or it could not be obtained even if it manufactures the television ingredient which has the specular gloss beyond it and prints by the electro photographic printer actually. Moreover, there is a gloss difference called a differential gross between the image section and a white ground in the print by the electro photographic printer, and there is unnaturalness of a feeling of gloss, like a photographic subject floats and appears within an image. It was not what may satisfy the conventional television ingredient as a photograph by the unnaturalness of such a feeling of lack of gloss and a feeling of gloss. In view of the trouble of these conventional techniques, this invention made it the technical problem to offer the television ingredient for electrophotography which can form the image excellent in gloss texture.

[Translation done.]

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MEANS

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, as a result of repeating examination wholeheartedly, when this invention person did specular gloss more than constant value and suppressed reflected light distribution below to constant value, it found out that the image which was excellent in the television ingredient for electrophotography at gloss texture could be formed, and this invention was reached.
[0006] That is, the television ingredient for electrophotography characterized by this invention satisfying the specular gloss GsP (45 degrees) of a toner image formation side and the conditional expression of the following [distribution / GsP (45 degrees **3 degrees) / reflected light] is offered.
[Equation 5] Formula 1 30<= GsP (45 degrees)
[Equation 6]
A formula 2 0 <= <=15 (in a top type GsP (45 degrees) 45 incident angles) GsP (45 degrees **3 degrees) specular gloss;GsP (45 degrees **3 degrees) in 45 light-receiving angles -- average [of GsP (*42 degree) and GsP (*48 degree)]; -- GsP (*42 degree) 45 incident angles Specular gloss in 42 light-receiving angles; GsP (*48 degree) is the specular gloss in 45 incident angles and 48 light-receiving angles.
[0007] When the print of a white image, 40% gray image, and the black image is carried out to a toner image formation side by the electro photographic printer, as for the television ingredient for electrophotography of this invention, it is desirable to satisfy the following conditional expression.
[Equation 7]
formula 3 -35 <= GsGr(45 degrees)-GsWh (45 degrees) <=10 -- [Equation 8]
Formula 4 <= -30 <= GsBl(45 degrees)-GsWh (45 degrees) 15 (in a top type) Specular gloss;GsWh (45 degrees) of the white image formation section in 45 incident angles and 45 light-receiving angles GsWh (45 degrees) 45 incident angles, Specular gloss of 40% gray image formation section in 45 light-receiving angles; GsBl (45 degrees) is the specular gloss of the black image formation section in 45 incident angles and 45 light-receiving angles.
[0008] As for the television ingredient for electrophotography of this invention, it is desirable that it is what has the structure where the toner television layer was formed at least in one side of the opaque base material which laminated both sides by resin. As for a toner television layer, it is desirable that thickness contains polyester resin by 5 micrometers or more. It is desirable that data smoothing which applies heat and/or a pressure to the television ingredient for electrophotography of this invention is performed, and, as for the processing temperature, it is desirable that it is 50 degrees C or more.
[0009]
[Embodiment of the Invention] The television ingredient for electrophotography of this invention is characterized by the specular gloss GsP (45 degrees) of a toner image formation side and the reflected light distribution GsP (45 degrees **3 degrees) satisfying the relation between the above-mentioned formula 1 and a formula 2. Setting at a ceremony 1, GsP (45 degrees) is JIS. The specular gloss in 45 incident angles and 45 light-receiving angles which are measured according to Z8741 is expressed. As prescribed in a formula 1, GsP (45 degrees) of the toner image formation side of the television ingredient for electrophotography of this invention is 30 or more. As for GsP (45 degrees), it is more desirable that it is 60 or more, and it is further more desirable that it is 75 or more.
[0010] In an equation 2, the reflected light distribution GsP (45 degrees **3 degrees) is the average of GsP (*42 degree) and GsP (*48 degree), and is computed according to the following formulas.
[Equation 9] [GsP(*42 degree) + GsP (*48 degree)] / 2GsP (*42 degree) is the specular gloss in 45 incident angles and 42 light-receiving angles, and GsP (*48 degree) is the specular gloss in 45 incident angles and 48 light-receiving angles. These values are JIS. Only the light-receiving angle of Z8741 is changed into 42 degrees thru/or 48 degrees, and is measured. Although GsP(s) (45 degrees **3 degrees) are 0-15 in this invention, it is desirable that it is 0-10, and it is more desirable that it is 0-6.
[0011] The television ingredient for electrophotography which fulfills the conditions of a formula 1 and a formula 2 has the description in the point that specular gloss is fully high and reflected light distribution is suppressed low. If it puts in another way, the description is in the point for an axis of abscissa that the profile when taking glossiness (reflected light concentration) along an axis of ordinate is more sharp, about a light-receiving angle. Conventionally, since attention was chiefly paid to raising the specular gloss of the television ingredient for electrophotography, even if it raised specular gloss, gloss texture has not fully been improved, but the limitation was in the improvement of gloss texture. this invention person used to find out that the gloss texture of a formation image can be improved unexpectedly by suppressing the high reflected light distribution with the conventional television ingredient for electrophotography for the first time under such a technical situation paying attention to reflected light distribution.
[0012] Since gloss texture can form a higher image if the above-mentioned formula 3 and a formula 4 are filled further, the television ingredient for electrophotography of this invention is desirable. If a formula 3 and a formula 4 are filled, the gloss difference (differential gross) between the image section and a white ground can be suppressed, and unnaturalness a photographic subject floats and appears within an image can be avoided. Whether these conditions are satisfied can form a white image, 40% gray image, and a black image in the television ingredient for electrophotography using the printer for electrophotography, and it can check them by measuring each specular gloss of the white image formation section, the gray image formation section, and the black image formation section. In a formula 3 and a formula 4, specular gloss;GsBl (45 degrees) of 40% gray image formation section [in / in specular gloss;GsWh (45 degrees) of the white image formation section / in / in GsWh (45 degrees) / 45 incident angles and 45 light-receiving angles / 45 incident angles and 45 light-

receiving angles] shows the specular gloss of the black image formation section in 45 incident angles and 45 light-receiving angles. Measurement is JIS. It carries out in conformity with Z8741.

[0013] As prescribed in a formula 3, it is desirable that GsGr(45 degrees)-GsWh (45 degrees) is -35-1 in this invention, it is more desirable that it is -30-10, and it is desirable that it is especially -20-5. As prescribed in a formula 4, it is desirable that GsBl(45 degrees)-GsWh (45 degrees) is -30-15 in this invention, it is more desirable that it is -30-10, and it is desirable that it is especially -20-5. In order to make the value of the reflected light distribution GsP (45 degrees **3 degrees) or less into 15 in this application, approaches, such as raising the below-mentioned surface smoothness, are useful.

[0014] The configuration of the television ingredient for electrophotography of this invention is explained below at a detail. As a base material which constitutes the television ingredient for electrophotography of this invention, fixation temperature can be borne, and if a demand can be satisfied in respect of the crater after smooth nature, a whiteness degree, slipping nature, friction nature, antistatic nature, and fixation etc., anythings can be used. Generally, base materials for photographs, such as edited by Society of Photographic Science and Technology of Japan "basic-film photo editing of photograph engineering -", paper given in Corona Publishing ** (Showa 54) (223) - (240) a page, and synthetic macromolecule (film), are mentioned. Specifically A synthetic paper (synthetic papers, such as a polyolefine system and a polystyrene system), Paper of fine quality, art paper, coat paper (both sides), a cast-coated paper (both sides), The mixed papermaking made from synthetic-resin pulp and natural pulp, such as polyethylene, Yankee paper, a baryta paper, wallpaper, a lining form, synthetic resin, or an emulsion impregnated paper, A synthetic-rubber-latex impregnated paper, synthetic resin containing paper, the paper board, cellulose fiber paper, Paper (paper which covered both sides especially with polyethylene) base materials, such as polyolefine coat paper, Polyolefine, a polyvinyl chloride, polyethylene terephthalate, polystyrene methacrylate, Polyethylenenaphthalate, a polycarbonate polyvinyl chloride, polystyrene, Polypropylene, polyimide, and celluloses (for example, triacetyl cellulose) The film which carried out processing (for example, processing of making pigments, such as titanium oxide, contain into a film etc.) which gives white reflexibility to the various plastic films or the sheet, and this plastics of ** or a sheet, cloth, a metal, and glass are used. As for these, it is desirable that the field of the side which could also use independently, could also use as a base material which laminated one side or both sides with synthetic macromolecules, such as polyethylene, and prepared the toner television layer at least laminates, and it is more desirable that the double-sided lamination is carried out. The mode laminated with polyethylene with a thickness of 5-30 micrometers is desirable. Moreover, the layered product by the combination of the arbitration of the above-mentioned base material can also be used. In addition, the base material of a publication can be used for a JP,62-253159,A (29) - (31) page, a JP,1-61236,A (14) - (17) page, JP,63-316848,A, JP,2-22651,A, a 3-56955 official report, a U.S. Pat. No. 5,001,033 description, etc.

[0015] 25-300 micrometers, the thickness of these base materials is 50-260 micrometers still more preferably, and is usually about 75-220 micrometers more preferably. Moreover, although various things are able to use it according to the object as stiffness, if photograph image quality tends to receive a picture, the thing near the base material for color film photos is used preferably. What is close to a base material or the smoother thing for color film photos is desirable also about smooth nature. Moreover, as a base material, it is desirable from a viewpoint of the fixation engine performance that the thermal conductivity of the paper under the conditions whose relative humidity is 65% at 20 degrees C is more than 0.50 kcal/m-h and **. Thermal conductivity is JIS. P The transfer paper which carried out gas conditioning based on 8111 can be measured by the approach indicated by JP,53-66279,A. Moreover, as for the consistency of a base material, it is desirable that it is three or more [0.7g //cm] from the above-mentioned viewpoint.

[0016] Various kinds of additives suitably chosen within limits which do not injure the object of this invention can be made to add in the configuration layer of the base material these-mentioned above. For example, pigments, colors, etc., such as a brightening agent, and an electric conduction agent, a loading material, titanium oxide, ultramarine blue, carbon black, can be made to contain if needed. Moreover, surface treatment and under coats various for the object which improves adhesion with the layer prepared on it can be performed to one side or both sides of these base materials. As surface treatment, activation, such as processing of mold attachment of a glossy surface or a detailed side given in JP,55-26507,A, a mat side, or a silky surface, and corona discharge treatment, flame treatment, glow discharge processing or plasma treatment, etc. is mentioned. As an under coat, the approach of a publication can be used for JP,61-846443,A, for example. Moreover, these can also use together and use performing activation, after using independently and performing mold attachment etc., or performing an under coat after surface treatment, such as activation, further etc. in the combination of arbitration. Into under the configuration of these base materials, a front face, rear faces, and those combination, the antistatic agent of a hydrophilic binder, a semiconductance metallic oxide like alumina sol or the tin oxide, and carbon black and others may be applied. Specifically, the base material of a publication can be used for JP,63-220246,A etc.

[0017] The television ingredient for electrophotography of this invention is constituted from some layers by the object on a base material, a color and a black toner are received at least, and the television layer for forming an image is prepared. A surface protective layer, an interlayer, an under coat, a cushion layer, an electrification accommodation (prevention) layer, a reflecting layer, a tint preparation layer, a shelf-life amelioration layer, an adhesion prevention layer, an anti curl layer, a smoothing layer, etc. can be prepared besides a television layer. Moreover, each layer may consist of two or more layers.

[0018] When it is the television ingredient of the transparency mold with which a television layer etc. is prepared on a transparence base material, it is desirable that each class on a base material is also transparent. Moreover, when it is the television ingredient of the reflective mold with which a television layer etc. is prepared on a reflective base material, there is no need that each class on a base material is transparent, and it is desirable. [of a rather white thing] As a whiteness degree, it is JIS. P It measures by the approach specified to 8123, and 85% or more is desirable. Moreover, it is desirable that a spectral reflectance is [the difference of the maximum spectral reflectance of 85% or more and this wavelength region and the minimum spectral reflectance] less than 5% in a 440-640nm wavelength region. Furthermore, it is more desirable that a spectral reflectance is [the difference of the maximum spectral reflectance of 85% or more and this wavelength region and the minimum spectral reflectance] less than 5% in a 400-700nm wavelength region. Moreover, the television ingredient for electrophotography of this invention can prepare a back layer in a television layer and an opposite hand on both sides of a base material.

[0019] When it is the television ingredient of the transparency mold with which a television layer etc. is prepared on a transparence base material, it is desirable that a back layer is also transparent, but when it is the television ingredient of the reflective mold with which a television layer etc. is prepared on a reflective base material, there may not be need that the back layer is transparent and may be any color. However, in the case of the double-sided output mold television ingredient which forms an image also in a rear face, it is desirable that a back layer is also white. A whiteness degree and 85% or more of a spectral reflectance are desirable like a front face. Moreover, for the television ingredient for electrophotography of this invention, opacity is JIS. P It measures by the approach specified to 8138, 85% or more

is desirable, and 90% or more is more desirable.
[0020] An organic and/or inorganic particle (it abbreviates to a mat agent below.) which is used for this invention may be set to a photograph technical field, is known, and can be defined as being the discontinuous particle of organic [which can be distributed in a new aquosity organic colloid binder], and/or an inorganic material.
[0021] As an example of an inorganic mat agent, it is a silver halide particle (the iodine atom may be further added slightly as a halogen component with the silver chloride, the silver bromide, etc.), glass, etc. which do not form oxide (for example, a silicon dioxide, titanium oxide, a magnesium oxide, an aluminum oxide, etc.), alkaline earth metal salts (for example, being a sulfate and a carbonate specifically a barium sulfate, magnesium sulfate, a calcium carbonate, etc.), and an image. An aluminum oxide and a silicon dioxide are desirable especially.
[0022] About an inorganic mat agent, the West German patent No. 2529321 description, the British patent No. 760775 description, The patent No. 1260772 description, a U.S. Pat. No. 1201905 description, The patent No. 2192241 description, the patent No. 3053662 description, the patent No. 3062649 description, The patent No. 3257206 description, the patent No. 3322555 description, the patent No. 3353958 description, The patent No. 3370951 description, the patent No. 3411907 description, the patent No. 3437484 description, The patent No. 3523022 description, the patent No. 3615554 description, the patent No. 3635714 description, the patent No. 3769020 description, the patent No. 4021245 description, and the patent No. 4029504 description have a publication.
[0023] And as an organic mat agent, starch, cellulose ester (for example, cellulose acetate propionate etc.), cellulose ether, synthetic resin (for example, ethyl cellulose etc.), etc. are mentioned. as the example of synthetic resin -- water -- insoluble or a poorly soluble composition polymer -- it is -- for example, alkyl (meta) acrylate -- Alkoxy alkyl (meta) acrylate, glycidyl (meta) acrylate, Acrylamide, vinyl ester (for example, vinyl acetate), acrylonitrile, (Meta) An olefin (for example, ethylene, a propylene), styrene, benzoguanamine resin, A formaldehyde condensation polymer, an epoxy resin, an amide, carbonate, Independent or combination, such as phenol resin, vinylcarbazole, and a polyvinylidene chloride, Or these, an acrylic acid, a methacrylic acid, alpha, beta-partial saturation dicarboxylic acid, The copolymer which combined the polymer which uses combination of hydroxyalkyl (meta) acrylate, sulfoalkyl (meta) acrylate, a styrene sulfonic acid, etc. as a monomer component, and the repeat unit can be used. In the case of the copolymer, the repeat unit of a little hydrophilic property may be included. An acrylic acid, a methacrylic acid, alpha, beta-partial saturation dicarboxylic acid, hydroxyalkyl (meta) acrylate, sulfoalkyl (meta) acrylate, and a styrene sulfonic acid are contained in the example of the monomer which forms the repeat unit of a hydrophilic property. Moreover, when a bridge is constructed in these, since it excels in thermal resistance, it can use very preferably. Bridge formation polymethylmethacrylate, polyethylene and bridge formation polystyrene, benzoguanamine resin, and a formaldehyde condensation polymer are desirable also in having mentioned above.
[0024] About an organic mat agent, the British patent No. 1055713 description, a U.S. Pat. No. 1939213 description, The patent No. 2221873 description, the patent No. 2268662 description, the patent No. 2322037 description, The patent No. 2376005 description, the patent No. 2391181 description, the patent No. 2701245 description, The patent No. 2992101 description, the patent No. 3079257 description, the patent No. 3262782 description, The patent No. 3443946 description, the patent No. 3516832 description, the patent No. 3539344 description, The patent No. 3591379 description, the patent No. 3754924 description, the patent No. 3767448 description, JP,49-106821,A, and a 57-14835 official report have a publication. as a commercial item -- for example, Showa Denko AS- 10, AS-20, AS-30, AS-40, AS-50, and the Sumitomo Seika Chemicals make -- flow bead LE-1080 and LE- 2080, EA-209, CL-2080, Fluothane UF-1.5, UF-4, and the NIPPON SHOKUBAI EPO star S -- S12, M30, MS, L15, GP-50, GP-70, GP-90, and the Sekisui Plastics make -- theque polymer SBX-6, SBX-8, SBX-12, SBX-17, and MBX- 8, MBX-12, MBX-15, MBX-20, MBX-30, and the Soken Chemical & Engineering make -- MR-2G -- MR-7G, MR-10G, MR-20G, SGP-70C, SGP-100C, SAIRISHIA 250, 250N, 256, and 256N made from the Fuji SHIRISHIA chemistry, 310, 320, 350, 370, 430, 440, 450, 470, 435, 445, 436, 446, 456, 476, 530, 550, 730, 740, 770, and Ganz -- formation -- make -- GANTSU pearl GM-0600, GM-1005, GM-2005, and GM-0401 -- GM-0801, GM-2001, GB-0502, GB-0802, GB-1002, GB-2002, Dow Corning Toray Silicone TOREFIRU R-900, R-902A, The Toshiba Silicone toss pearls 105, 120, 130, 145, 3120, and 240 and Matsumoto Yushi-Seiyaku Matsumoto microphone loss fur F-30** are mentioned, and starch, titanium oxide, etc., such as wheat, may be used. inside -- the Showa Denko make -- AS-10, AS-20, AS-30, the NIPPON SHOKUBAI EPO star L15, and the Sekisui Plastics make -- theque polymer SBX-12, SBX-17, and MBX-20 are desirable.
[0025] Two or more kinds of particles mentioned above may be used together. As for mean particle diameter, it is desirable that it is 1-100 micrometers, and its further 2-30 micrometers are desirable. 0.2 to 30 times of the thickness of a television layer are desirable, and further 0.5 to 20 times are one to 15 times desirable especially preferably. Especially as amount of the particle used, it is desirable that it is 0.01 - 0.5 g/m2, and it is still more desirable that it is 0.02 - 0.3 g/m2. When it thinks with projected area, 0.1 - 50% of this is desirable, desirable, and especially desirable. [1 - 20% of] [further 0.5 - 30% of] As for the refractive index of the organic and/or inorganic particle used for this invention, it is desirable that it is 0.8-3.0, it is more desirable that it is 1.1-2.9, and it is desirable that it is especially 1.3-2.6.
[0026] A toner television layer receives at least the toner which forms an image from a development drum or a medium imprint object by the electrical and electric equipment (**), a pressure, etc. in an imprint process, and contains the matter of the televising nature which can be fixed with heat, a pressure, etc. at a fixation process. As receptiveness matter, thermoplastics, water soluble resin, a pigment with a fine particle size, etc. are used. As for a toner television layer, it is desirable to have 1/2 or more thickness of the particle diameter of a toner, and it is more desirable to have particle diameter 1 to 3 times the thickness of a toner. Moreover, a toner television layer has the desirable thing of the thickness indicated by JP,5-216322,A and the No. 301939 [seven to] official report.
[0027] As physical properties of a toner television layer, it is desirable to satisfy the following one item or more, and it is desirable two or more more desirable items and to satisfy all items most preferably.
(1) Tg(s) (glass-transition temperature) of a television layer should be 30 degrees C or more and less than [(Tgof toner)+20 degree C].
(2) The range of T1/2 of a television layer (1/2 law softening temperature) should be 80-120 degrees C more preferably. [60-150-degree C]
(3) Tfb (runoff initiation temperature) of a television layer should be [40-100 degree C of Tfb(s) of a television layer] less than [of a toner / Tfb+10 degree C] more preferably.
(4) The viscosity of 40 degrees C or more and a toner has the temperature lower than the temperature set to 1x105CP from which the viscosity of a television layer is set to 1x105CP.
(5) The storage modulus (G') in the fixation temperature of a television layer being 1x102Pa - 1x105Pa and a loss modulus (G") should be 1x102Pa - 1x105Pa.
(6) The loss tangents (G"/G') which are the ratios of the loss modulus (G") and storage modulus (G') in the fixation temperature of a

television layer should be 0.01-10.
(7) The storage modulus (G') in the fixation temperature of a television layer should be -50-+2500 to the storage modulus (G") in the fixation temperature of a toner.
(8) 50 degrees or less of tilt angles on the television layer of a melting toner should be 40 degrees or less preferably. Moreover, what satisfies the physical properties currently indicated by the patent No. 2788358 official report, JP,7-248637,A, JP,8-305067,A, JP,10-239889,A, etc. as a television layer is desirable.
[0028] The physical properties of the above (1) can be measured with differential-scanning-calorimetry equipment (DSC). moreover, the physical properties of (2) - (4) -- for example, the Shimadzu make -- it can measure using flow tester CFT-500. Moreover, the physical properties of (5) - (7) can be measured using a revolution mold rheometer (for example, the dynamic analyzer RADII by the LEO metric company). The physical properties of (8) can be measured by the approach indicated by JP,8-334916,A using the contact angle measuring device made from Kyowa Surface chemistry.
[0029] If it deforms at fixation temperature and a toner may be received as thermoplastics used for the television ingredient for electrophotography of this invention, especially the class will not be restricted. Preferably, the resin used as a binder of a toner and the resin of a same system are desirable. As a binder of a toner, since polyester resin is used abundantly, it is desirable to use polyester resin 20% of the weight or more preferably also as thermoplastics used for the television ingredient for electrophotography of this invention in that case. Moreover, a styrene-acrylic ester copolymer, a styrene-methacrylic ester copolymer, etc. are used preferably. The resin preferably used for below is explained.
[0030] Resin; polyurethane resin which has an ester bond as thermoplastics used for the television ingredient for electrophotography of this invention; Polyamide resin, ;, such as a urea-resin, -- polysulfone resin; -- polyvinyl chloride resin and polyvinylidene chloride resin -- Vinyl chloride vinyl acetate copolymer resin, vinyl chloride-propionic-acid vinyl copolymer resin, etc.; A polyvinyl butyral etc., Cellulosic resin, such as polyol resin, ethyl cellulose resin, and cellulose acetate resin etc.; Poly caprolactone resin, Styrene-maleic-anhydride resin, polyacrylonitrile resin, polyether resin, An epoxy resin, phenol resin, etc.; Polyolefin resin, such as polyethylene resin and polypropylene resin, The copolymer resin,; and such mixture or copolymers of olefins, such as ethylene and a propylene, and other vinyl monomers, such as acrylic resin, etc. can be mentioned.
[0031] In these thermoplastics, the resin which has an ester bond is desirable, for example, can use polyacrylic ester resin, such as polymethyl acrylate, poly butyl acrylate, polymethylmethacrylate, and poly butyl methacrylate, or polymethacrylic-acid-ester resin, polyester resin, polycarbonate resin, polyvinyl acetate resin, styrene acrylate resin, the styrene-methacrylic ester copolymer resin, vinyltoluene acrylate resin, etc.
[0032] The above-mentioned polyester resin A terephthalic acid, isophthalic acid, a maleic acid, A fumaric acid, a phthalic acid, an adipic acid, a sebacic acid, an azelaic acid, an abietic acid, Polycarboxylic acid components, such as a succinic acid, trimellitic acid, and pyromellitic acid (the sulfonic group, the carboxyl group, etc. may permute by these dicarboxylic acid components), Ethylene glycol, a diethylene glycol, propylene glycol, The diether derivative of bisphenol A and bisphenol A For example, (ethyleneoxide 2 addition product of bisphenol A, propylene oxide 2 addition product of bisphenol A), etc., It is obtained by condensation with alcoholic components (the hydroxyl group etc. may be permuted by these alcoholic components), such as Bisphenol S, 2-ethyl cyclohexyl dimethanol, neopentyl glycol, cyclohexyl dimethanol, and a glycerol.
[0033] As an example of polyester resin, the thing of a publication can be mentioned to JP,59-101395,A, JP,63-7971,A, JP,63-7972,A, JP,63-7973,A, and JP,60-294862,A. Moreover, as a commercial item, Toyobo Byron 290, Byron 200, Byron 280, Byron 300, Byron 103, Byron GK-140, Byron·GK-130, tough Kao ton NE-382, tough ton -5, ATR-2009, ATR-2010 and Unitika Ely Tell UE3500 and UE3210, XA-8153, Pori Ester TP-220 made from Japanese synthetic chemistry, and R-188 grade can be used.
[0034] Although the thermoplastics used for the toner television layer of this invention can satisfy the above-mentioned television layer physical properties where a toner television layer is formed, choosing from inside is desirable. further -- desirable -- resin -- even when it is independent, what can give desirable physical properties to a toner television layer is mentioned. Moreover, it is also desirable to use together the resin with which the above-mentioned physical properties differ two or more.
[0035] Moreover, as thermoplastics used for a toner television layer, a large thing is preferably used compared with the molecular weight of the thermoplastics used for the toner. However, depending on the relation of the thermodynamic property of toner resin and television layer resin, the relation of the above-mentioned molecular weight is not necessarily desirable. For example, when the softening temperature of television layer resin is high, as for molecular weight, it may be more desirable than toner resin that an EQC and television layer resin is smaller. using the mixture of the resin with which average molecular weight differs by the same presentation as thermoplastics used for a toner television layer -- things are also desirable. Moreover, the relation with the molecular weight of the thermoplastics used for the toner has the desirable relation currently indicated by JP,8-334915,A. Moreover, the thing larger than the molecular weight distribution of the thermoplastics used for the toner of the molecular weight distribution of the thermoplastics used for a toner television layer is desirable. furthermore -- as the thermoplastics used for a toner television layer -- JP,5-127413,B, 8-194394, 8-334915, and 8-334916 -- said -- what satisfies the physical properties currently indicated by 9-171265, 10-221877, etc. is used preferably.
[0036] Various additives can be used for the thermoplastics content layer of the television ingredient for electrophotography of this invention in order to improve the thermodynamic property of a resin layer. As an additive of such an object, a plasticizer, an organic and inorganic filler, an emulsification object, a distributed object, a cross linking agent, etc. are mentioned. The well-known plasticizer for resin can be used as a plasticizer used for this invention.

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

EXAMPLE

[Example] An example is given to below and this invention is explained to it still more concretely. The ingredient shown in the following examples, the amount used, a rate, the content of processing, procedure, etc. can be suitably changed, unless it deviates from the meaning of this invention. Therefore, the range of this invention is not limited to the example shown below.
[0082] Spreading desiccation was carried out in the wire coating machine so that the thickness after drying the constituent for television layers of the class indicated by the table 2 on the base material of the class indicated by the <manufacture of television ingredient for electrophotography> table 2 might be set to 15 micrometers. Data smoothing was performed if needed and the television ingredient for electrophotography was created as the desiccation zone was adjusted to the specific temperature indicated by the table 2, and was dried for 3 minutes and it was further indicated by the table 2 immediately after spreading. In addition, the television ingredient 15 was directly used with the base material C, without forming a television layer. The class of base material indicated by the table 2, the class of constituent for television layers, desiccation conditions, and data smoothing are as being shown below.
[0083] The surface polyethylene layer with a thickness of 10 micrometers it is thin on one side of the pulp layer which <base material B1> thickness becomes from the paper of fine quality (LBKP/NBSP=6/4, consistency 1.053 g/cm3) which is 160 micrometers from medium density polyethylene (consistency 0.939 g/cm3, melting point of 120 degrees C) was formed. The rear-face polyethylene layer with a thickness of 25 micrometers it is thin from low density polyethylene (3 consistency melting point of 107 degrees C of 0.918g/cm) was formed in the reverse side of a pulp layer.
[0084] Thus, after carrying out corona discharge treatment of the polyethylene layer on the rear face of a table of the prepared base material, it applied and dried in the wire coating machine, and undercoat was prepared, and the following back layer constituent was applied in the wire coating machine, it dried, the back layer was prepared so that the concentration after desiccation might become 1.0 g/m2 in a rear face, and it considered as the base material B1 so that the thickness after drying the following constituent for undercoat in a front face might be set to 0.1 micrometers. In addition, when forming a television layer constituent on a base material B1, after performing corona discharge treatment on undercoat, it formed on it.
[0085]
Constituent for undercoat: Gelatin Five weight sections Water 95 weight sections Constituent for back layers: Polyester resin (BAIRONARU MD-1930, Toyobo make)
90 weight sections Mat agent (the EPO star L15, NIPPON SHOKUBAI make) 50 weight sections Water The 10000 weight sections [0086] The cast-coated paper (the Oji Paper make, mirror coat platinum, basis weight 174.4 g/m2) of <base material B-2> marketing was used as base material B-2.
[0087] The <base material B3> basis weight 120/the paper of fine quality (the Oji Paper make, O.K. prince superior quality, the basis weight of 127.9g/m2) of m2 was used as a base material B3.
[0088]
<Television layer constituent C1> Polyester resin (the tough ton U-5, Kao make) The 100 weight sections Titanium dioxide (TIPAQUE RA-220, Ishihara Sangyo make) 15 weight sections Methyl ethyl ketone The 400 weight sections [0089]
<Television layer constituent C2> Polyester resin (made in [Kao] Byron 200) The 100 weight sections Titanium dioxide (TIPAQUE RA-220, Ishihara Sangyo make) 15 weight sections Methyl ethyl ketone The 400 weight sections [0090]
<Television layer constituent C3> Polyester resin (a terephthalic acid, isophthalic acid, a sebacic acid, ethylene glycol, the copolymer of a sebacic acid, a polymerization mole ratio = 2:1.5:1.5:5) The 100 weight sections Titanium dioxide (TIPAQUE RA-220, Ishihara Sangyo make) 15 weight sections Methyl ethyl ketone The 400 weight sections [0091] Temperature setting out of the desiccation zone immediately after <desiccation condition> spreading (desiccation during 3 minutes each)
D1 110-degree-CD2 100-degree-CD3 90-degree-CD4 80-degree-CD5 70 degrees C [0092] <Data smoothing> Nothing E1 which does not perform data smoothing It is operation E2 about the glazed finish use the heat roll which gave mirror finish and according to **** at 70 degrees C. It is operation [0093] about the glazed finish use the heat roll which gave mirror finish and according to **** at 85 degrees C. About each television ingredient for electrophotography of which <assessment of gloss property> creation was done, it is JIS. Specular gloss Gs (45 degrees) was measured according to Z8741. Moreover, JIS According to 45-degree specular gloss measuring method of Z8741, the light-receiving angle was changed into 42 degrees and 48 degrees, respectively, specular gloss Gs (42 degrees) and Gs (48 degrees) was measured, and it asked for the reflected light distribution GsP (45 degrees **3 degrees) according to the formula 1. Performing measurement using the digital deflection glossmeter (the Suga Test Instruments Co., Ltd. make, type UGV-6P), the measurement aperture presupposed that the diameter of 8mm is circular.
[0094] The television ingredient for electrophotography created [which created and <-print-examined] was cut out to A4, it set to the color laser printer (DocuColor1250, Fuji Xerox make), and the image from a computer was printed. The image printed four sorts of the portrait of white, gray (R=G=B=40% of an image), black, and a woman. The specular gloss after a print was measured about the image of white, gray, and black. Moreover, about the female portrait, ten test subjects evaluated gloss texture in the following five steps, and recorded the average.
5 very desirable 4 Desirable 3 Permissible level 2 Dysphoria 1 dramatically unpleasant -- these test results are collectively shown in a table 2. In addition, the example of this invention was all good about ZARATSUKI or lack, and was good. [of brittleness]
[0095]

[A table 2]

画像形成材料 No.	製造条件				評価							
	支持体	受像層組成物	乾燥条件	平滑化処理	GsP(45°)						GsP(45°±3°)	光沢質感
					前	W	G	G-W	B	B-W	前	
1(本発明)	B1	C1	D3	なし	87	86	70	-16	89	3	13	3.4
2(本発明)	B1	C1	D4	なし	88	84	71	-13	87	3	10	3.8
3(本発明)	B1	C1	D5	なし	88	85	73	-12	88	3	7	4.3
4(本発明)	B1	C1	D5	E1	91	91	76	-15	91	0	4	4.6
5(本発明)	B1	C1	D5	E2	92	91	78	-13	92	1	2	4.8
6(本発明)	B1	C2	D5	なし	85	85	50	-35	63	-22	14	3.1
7(本発明)	B1	C3	D5	なし	78	79	80	1	93	14	10	3.0
8(本発明)	B2	C1	D5	なし	52	65	52	-13	74	9	12	3.2
9(本発明)	B2	C1	D4	なし	45	51	40	-11	51	0	14	3.1
10(比較例)	B1	C1	D1	なし	76	78	70	-8	89	11	30	2.6
11(比較例)	B1	C1	D2	なし	82	83	72	-11	89	6	21	2.8
12(比較例)	B2	C1	D2	なし	44	43	33	-10	52	9	22	2.5
13(比較例)	B2	C1	D1	なし	42	42	35	-7	58	16	30	2.0
14(比較例)	B3	C1	D5	なし	22	22	36	14	58	36	8	2.0
15(比較例)	B3	なし	なし	なし	13	13	35	22	75	62	8	1.3

(注) 前：プリント前　W：白　G：グレー　B：黒

[0096] moreover, a commercial color laser printer -- concrete -- a Fuji Xerox full color laser beam printer (A color 629 --) Color laser window CLW-3320PS, Xerox color Copiers (DocuColor 5750), Seiko Epson make LP-8000C, product made from the Casio electronic industry COLOR PAGEPRESTO N4-ST, product made from canon COLOR LASER SHOT LBP-2030 and made in queue em S Japan magicolor 2 and Konica make Color LaserBit KL-2010 Sharp make JX-8200, Hitachi make BEAMSTAR-RW, Minolta make Color Page Pro Also about the case where it prints in PS, the same result as a table 2 was obtained.

[Translation done.]